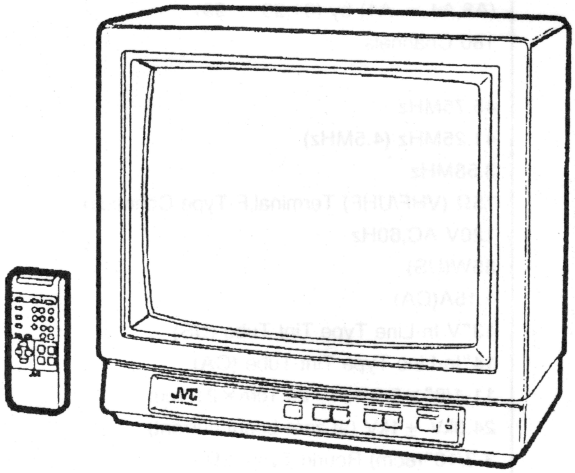
JVC

SERVICE MANUAL

COLOR TV

C-13CL3 (US&CA)
C-13WL3 (US&CA)

BASIC CHASSIS
FY V



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No.50684
Feb. 1992

SPECIFICATIONS

Item	Content	
Dimensions (W×H×D)	14-5/8" × 12-5/8" × 14-3/8" / 37.0cm × 31.9cm × 36.5cm	
Weight	20.7lbs / 9.4kg	
GND	Only LIVE GND	
TV System and Color system		
TV RF System	CCIR (M)	
Color System	NTSC	
TV Receiving Channels and Frequency		
VL Band	(02 ~ 06) 54MHz ~ 88MHz	
VH Band	(07 ~ 13) 174MHz ~ 216MHz	
UHF Band	(14 ~ 69) 470MHz ~ 806MHz	
CATV Receiving Channels and Frequency		
(Quartz Synthesizer system)		
Low Band	(02 ~ 06,A-8) by (02 ~ 06&01)	(54MHz~804MHz)
High Band	(07 ~ 13) by (07 ~ 13)	
Mid Band	(A ~ 1) by (14 ~ 22)	
Super Band	(J ~ W) by (23 ~ 36)	
Hyper Band	(W+1 ~ W+28) by (37 ~ 64)	
ULTRA Band	(W+29 ~ W+84) by (65 ~ 125)	
Sub Mid Band	(A8,A4 ~ A1) by (01,96 ~ 99)	
TV/CATV Total Channel	180 Channels	
Intermediate Frequency		
Video IF Carrier	45.75MHz	
Sound IF Carrier	41.25MHz (4.5MHz)	
Color Sub Carrier	3.58MHz	
Antenna Input Impedance	75Ω (VHF/UHF) Terminal,F-Type Connector	
Power Input	120V AC,60Hz	
Power Consumption	85W(US)	
Input Current	1.15A(CA)	
Picture Tube	13"V In-Line Type Tint Tube (US) 14"In-Line Type Tint Tube (CA)	
Viewable Picture Size (W×H)	11-1/8" × 8-5/16" / 28.1cm × 21.1cm	
High Voltage	24.0kV ± 1kV (at zero beam current)	
Speaker	3-3/16"(8cm) Round Type, 8Ω	
Audio Power Output	1.2W	
Tube	1	
IC	11 (In TV), 1 (In REMOCON)	
Transistor	22 (In TV), 2 (In REMOCON)	
Remote Control Unit	RM-C423 (C-13CL3) RM-C423WH (C-13WL3)	

Design & specification subject to change without notice.

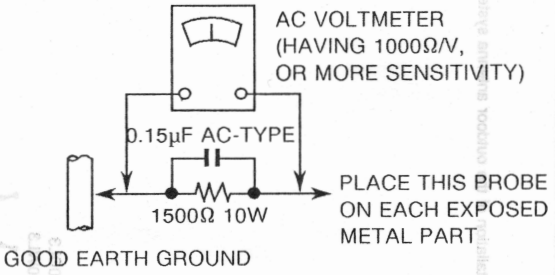
SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection,no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual many create shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contrained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and NEUTRAL side grounding or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (⊥) side GND, the NEUTRAL (⏚) side GND and EARTH (⏚) side GND. Don't short between the LIVE side GND and NEUTRAL side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B_1 setting should be checked or adjusted (See ADJUSTMENT OF B_1 POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approvided by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs,metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.) Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

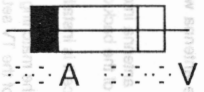
• Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement, Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item **"How to check the high voltage hold down circuit"**.

■ **ONLY CANADA**

This mark shows a fast operating fuse, the letters indicated below show the rating.



FEATURES

- New chassis design enables use of a single board with simplified circuitry.
- Provided with miniature tuner (TV/CATV).
- PLL synthesizer system TV/CATV totaling 180 channels.
- Deletion of user VR by master command and increased features possible simultaneously.
- Multifunctional remote control permits picture adjustment.
- Adoption of the CHANNEL GUARD function prevents the specific channels from being selected, unless the "ID number" is key in.
- Adoption of the AV STATUS function that can store 2 variations for preset picture adjustment, to change the picture tone to your preference.
- Adoption of the HOME SITTER function enable to be turned on and off automatically at present times everyday.
- ON/OFF TIMER for setting in real time.
- With 75Ω V/U in common (F-Type) ANT Terminal.

OPERATING INSTRUCTIONS

INSTALLATION

ANTENNA CONNECTIONS
An outdoor antenna is recommended for good TV picture reception. (For installation of the outdoor antenna system, consult your local dealer.)

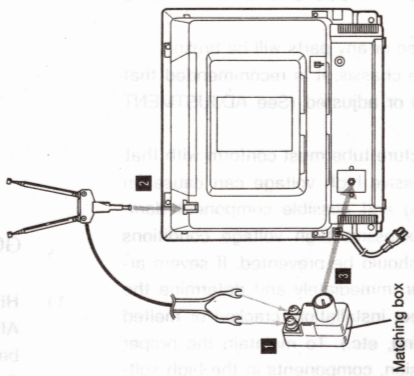
1. Indoor antenna
Install the indoor antenna provided as follows:

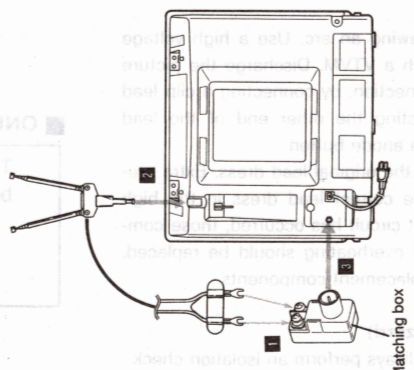
1. Attach the antenna wires to the matching box with screws.
2. Insert the antenna into the antenna mounting socket at the top of the back of the TV.

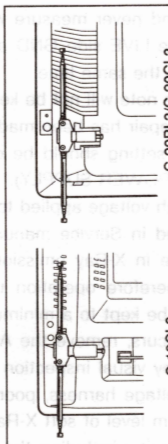
Note: Once it is installed, it cannot be removed.

3. Connect the matching box to the antenna terminal on the back of the TV set.

- Extend and rotate the rods of the antenna to adjust its angle and direction so that the best reception can be obtained.





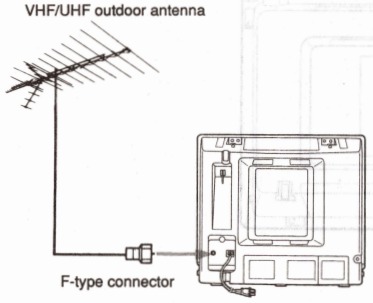


When receiving a UHF broadcast, shorten the rods of the antenna to their minimum lengths, and open them to the right and left, as shown.

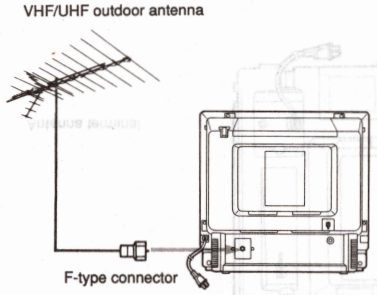
2. Outdoor antenna

For installation of the outdoor antenna system, consult your local dealer.

C-13CL3
C-13WL3

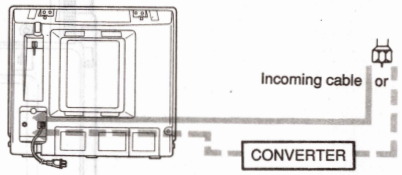


C-20BL3/C-20CL3
C-20RL3/C-20WL3

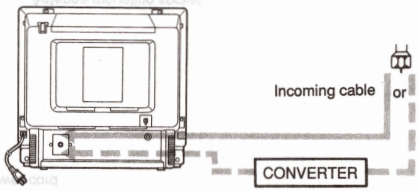


CABLE TV CONNECTIONS

C-13CL3
C-13WL3



C-20BL8/C-20CL3
C-20RL3/C-20WL3



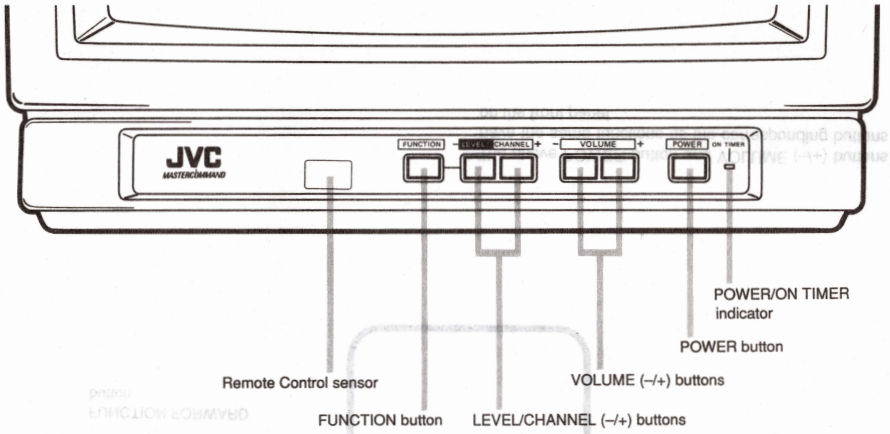
- Some cable companies require a converter box to receive all available programs. Others may require it for subscription or "premium" programming. Consult your local cable company for correct installation.
- When connecting both a cable (75-ohm coaxial) and a UHF antenna (300-ohm feeder), use the optional antenna mixer (CE41467) to make a single connection.

Note: With this antenna mixer, reception of cable channels higher than "Channel W + 17" is not possible.

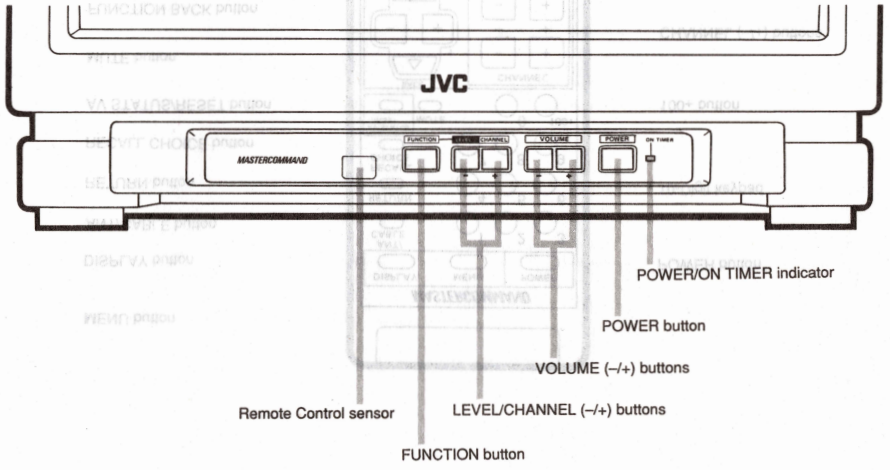
CONTROLS AND THEIR LOCATIONS

FRONT PANEL

C-13CL3/C-13WL3



C-20BL3/C-20CL3
C-20RL3/C-20WL3



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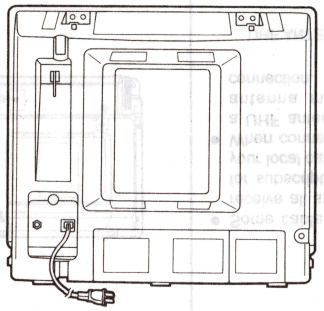
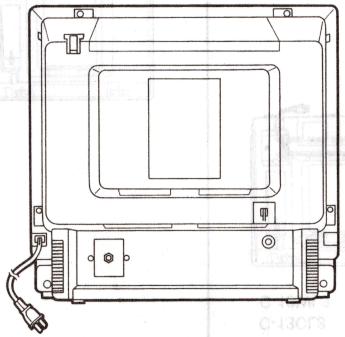
REAR PANEL

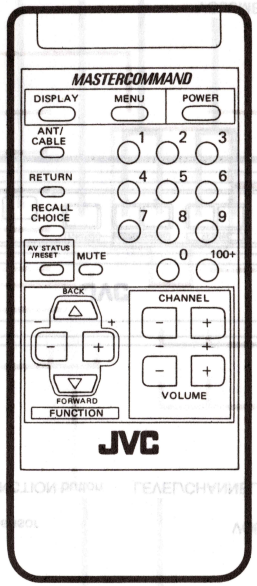
C-13CL3/C-13WL3



C-20BL3/C-20CL3
C-20RL3/C-20WL3



REMOTE CONTROL UNIT



MENU button

DISPLAY button

ANT/CABLE button

RETURN button

RECALL CHOICE button

AV STATUS/RESET button

MUTE button

FUNCTION BACK button

FUNCTION (–/+) buttons

FUNCTION FORWARD button

POWER button*

10-Digit keypad

100+ button

CHANNEL (–/+) buttons

VOLUME (–/+) buttons*

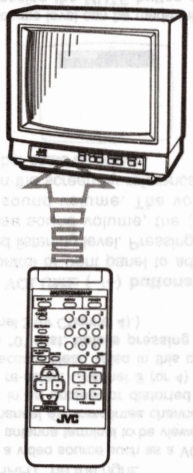
* The above POWER button and VOLUME (–/+) buttons have the same functions as the corresponding buttons on the front panel.

REMOTE CONTROL USE

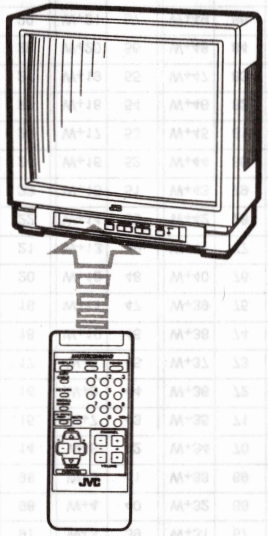
CORRECT USE

- Point to the Remote Control sensor of the TV set.
- The maximum operable distance is approximately 23 ft (7 meters) from the Remote Control sensor, and no more than 30° to either side of center.
- Operation of the Remote Control is most effective when there is nothing between it and the Remote Control sensor.
- Duration of the batteries is approximately 6 months to 1 year (Duration varies depending on frequency of use.) Replace the batteries when the remote operation becomes unstable.

C-13CL3/C-13WL3



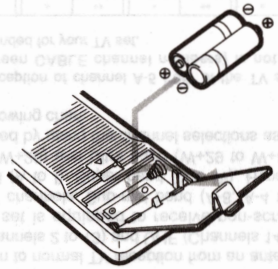
C-20BL3/C-20CL3
C-20RL3/C-20WL3



BATTERY INSTALLATION/NOTES

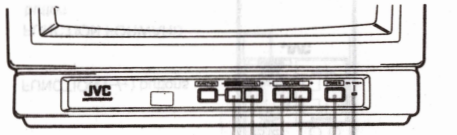
- Press the tab and lift up the cover in the direction of the arrow.
- Correctly install the batteries, observing (+/–) polarities as shown.
- Do not use a combination of old and new batteries or batteries of different types.
- If batteries become exhausted, remove and replace them soon.
- If Remote Control will not be used for more than 2 weeks, remove batteries.
- When battery leakage occurs, clean the battery compartment with a soft cloth and replace the batteries.

■ The batteries provided might become exhausted earlier than specified above if they have deteriorated. If the Remote Control does not operate, replace the batteries with new ones.



TV OPERATION

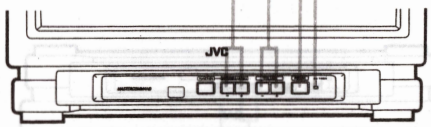
C-13CL3/C-13WL3

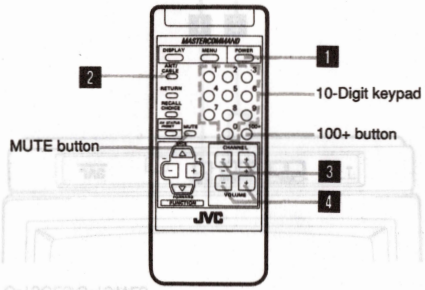


POWER/ON TIMER indicator

3 4 1

C-20BL3/C-20CL3
C-20RL3/C-20WL3





FIRST PREPARATIONS

- **Connect either Antenna or Cable TV** by following "Installation" instructions on page 4.
- **Insert batteries into the Remote Control unit** by following "Remote Control Use" instructions on page 9.
- **Connect the power cord to 120 V, 60 Hz AC outlet.** The power cord is supplied with a polarized plug. Therefore, it will only insert one way into the wall outlet. DO NOT DEFEAT THE POLARIZED PLUG. If you have difficulty, consult your local dealer.

BASIC OPERATING PROCEDURE

1 **Press the POWER button** on either the Remote Control or front panel. The POWER/ON TIMER indicator lights. Press this button again to turn power off.

Note: If the POWER/ON TIMER indicator remains lit even after the power is turned off, it shows the ON TIMER is in operation. See "5. SET ON TIMER" on page 19 and "7. HOME SITTER" on page 22.

2 **Press the ANT/CABLE button** on the Remote Control to select the broadcast mode. Each time it is pressed, the mode is switched between "CHANNEL" and "CABLE". When connected to an antenna, select "CHANNEL" mode for normal VHF/UHF reception. When connected to cable TV, select "CABLE" mode. The on-screen display will show the following:

CHANNEL–03 ⟷ CABLE–15

Note: For mode selection using the front panel controls, see "FUNCTION BUTTONS" on page 12.

3 **Select desired channel** using the CHANNEL (–/+) buttons on the Remote Control (or LEVEL/CHANNEL (–/+) buttons on the front panel). Pressing the (+) button advances to higher channels, (–) button to lower channels.

Note: Certain channels have been preset at the factory. It may be necessary to add or erase some channels in your areas. See "9. INITIAL SET-UP" on page 26 for presetting channels.

- Channels can be selected directly by using the 10-digit keypad on the Remote Control. For example, if you select channel 5, press "0" first, then press "5". (Be sure to press "0" first, before pressing "5" for channel 5.) For cable channels of 3-digit numbers, use the 100+ button. For example, if selecting channel 120, press the 100+ button first, then press "2", then "0". Also refer to the "CABLE TV CHANNEL CONVERSION CHART" on the right.

Note: When a video source such as a VCR is connected to the antenna terminal to be viewed on Channel 3 (or Channel 4), sometimes channel selection may result in an unclear or distorted picture. In this case, re-select Channel 3 (or 4) and the picture will become clear. (Also in this case, be sure to press "0" first, before pressing "3" (or "4") for Channel 3 (or Channel 4).)

4 **Press the VOLUME (–/+) buttons** on either the Remote Control or front panel to adjust volume to your desired listening level. Pressing the (+) button will increase sound volume, the (–) button will descrese sound volume. The volume level is indicated on the screen by reference number (0 to 50) and by bar scale as shown.

Note: The volume level can be made minimum instantly by pressing the MUTE button on the Remote Control. See "MUTE button" on page 29.

ON-SCREEN DISPLAY

- Once the on-screen display appears on the screen, it disappears in a few seconds. (Only the clock time can be kept displayed on the screen. See "DISPLAY button" on page 29.)
- When tuned to a channel where no program is being broadcasted, the on-screen display may be unclear or blurred.
- Channel numbers of the "CHOICE channels" can be displayed with their station call letters. If you prefer to do so, enter the station call letters when you program the "CHOICE channels". See "1. CHOICE PROGRAMING" on page 15.

CABLE TV CHANNEL CONVERSION CHART

In addition to normal TV reception from an antenna for VHF (Channels 2 to 13) and UHF (Channels 14 to 69), your TV set is equipped to receive non-scrambled cable TV channels. Sub-mid band (A-8, A-4 to A-1), Mid band (A to I), Super band (J to W), Hyper band (W+1 to W+28) and Ultra band (W+29 to W+84) can be received by using the channel selections as shown in the following chart.

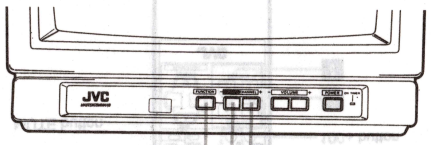
Note: Reception of channel A-5 ("95" of the TV set's on-screen CABLE channel numbers) is not recommended for your TV set.

*	**	*	**	*	**	*	**
A-8	01	W+1	37	W+29	65	W+57	93
A-4	96	W+2	38	W+30	66	W+58	94
A-3	97	W+3	39	W+31	67	W+59	100
A-2	98	W+4	40	W+32	68	W+60	101
A-1	99	W+5	41	W+33	69	W+61	102
A	14	W+6	42	W+34	70	W+62	103
B	15	W+7	43	W+35	71	W+63	104
C	16	W+8	44	W+36	72	W+64	105
D	17	W+9	45	W+37	73	W+65	106
E	18	W+10	46	W+38	74	W+66	107
F	19	W+11	47	W+39	75	W+67	108
G	20	W+12	48	W+40	76	W+68	109
H	21	W+13	49	W+41	77	W+69	110
I	22	W+14	50	W+42	78	W+70	111
J	23	W+15	51	W+43	79	W+71	112
K	24	W+16	52	W+44	80	W+72	113
L	25	W+17	53	W+45	81	W+73	114
M	26	W+18	54	W+46	82	W+74	115
N	27	W+19	55	W+47	83	W+75	116
O	28	W+20	56	W+48	84	W+76	117
P	29	W+21	57	W+49	85	W+77	118
Q	30	W+22	58	W+50	86	W+78	119
R	31	W+23	59	W+51	87	W+79	120
S	32	W+24	60	W+52	88	W+80	121
T	33	W+25	61	W+53	89	W+81	122
U	34	W+26	62	W+54	90	W+82	123
V	35	W+27	63	W+55	91	W+83	124
W	36	W+28	64	W+56	92	W+84	125

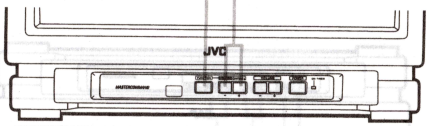
* : Regular cable channel designations
** : Your TV set's corresponding on-screen CABLE channel numbers

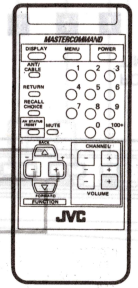
FUNCTION BUTTONS

C-13CL3/C-13WL3



C-20BL3/C-20CL3
C-20RL3/C-20WL3





FUNCTION BACK button

FUNCTION (–/+) buttons

FUNCTION FORWARD button

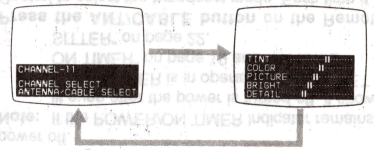
The FUNCTION button on the front panel selects the control modes for TV operation and picture adjustment.

1 **Press the FUNCTION button** on the front panel. The first time it is pressed, the following display appears on the screen.

(At this time, the top line shows the current channel number.)

- Press the FUNCTION button to select the desired item for adjustment. Each time the FUNCTION button is pressed, the magenta-colored portion shifts in the order below to show that the colored item in the list can be adjusted.

(Two pages of on-screen displays are available with the FUNCTION button.)



① CHANNEL SELECT mode
↓
② ANTENNA/CABLE SELECT mode
↓
③ TINT adjustment mode
↓
④ COLOR adjustment mode
↓
⑤ PICTURE adjustment mode
↓
⑥ BRIGHT adjustment mode
↓
⑦ DETAIL adjustment mode

Note: The Remote Control's FUNCTION BACK button or FORWARD button selects **only picture adjustment modes: TINT, COLOR, PICTURE, BRIGHT and DETAIL.** The other control modes can be selected directly with the Remote Control's respective buttons. Pressing the FUNCTION FORWARD button advances the colored portion in the order as shown above for "Picture adjustment modes", pressing the FUNCTION BACK button advances in the reverse order.

2 After selecting the desired mode, **press the LEVEL/CHANNEL (–/+) buttons** on the front panel or FUNCTION (–/+) buttons on the Remote Control while the selected mode indication is being displayed to make your preferred adjustment. The Remote Control's FUNCTION (–/+) buttons control **only picture adjustments.**

Notes:

- When using the front panel buttons, before the FUNCTION button is pressed for the first time with nothing displayed on the screen, the TV is in the "CHANNEL SELECT" mode. Therefore, in this mode, channel selection is possible by pressing the LEVEL/CHANNEL (–/+) buttons on the front panel.
- After completing picture adjustments from the Remote Control, selecting either the FUNCTION (–) or (+) button will return directly to the last chosen adjustment mode.

① CHANNEL SELECT mode

In this mode, press the LEVEL/CHANNEL (+) button on the front panel to scan up the channel, and press (–) button to scan down the channel.
(The screen illustrations below show the case when the TV is in the "CHANNEL" mode. When in the "CABLE" mode, the "CABLE" indication appears instead of "CHANNEL".)

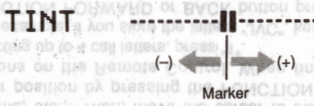
② ANTENNA/CABLE SELECT (broadcast) mode

In this mode, press the LEVEL/CHANNEL (–/+) buttons on the front panel to change the broadcast mode between "CHANNEL" (for regular VHF/UHF channels) and "CABLE" (for cable channels).

③ – ⑦ Picture adjustment modes

In these modes, an adjustment scale with a marker appears on the screen. Press the LEVEL/CHANNEL (–/+) buttons on the front panel or FUNCTION (–/+) buttons on the Remote Control to fine adjust each item to your preference according to the chart below. (The center position is only a reference level, rather than a standard setting.)

(–) button	Item	(+) button
Reddish	TINT	Greenish
Subdued	COLOR	Vivid
Light	PICTURE	Strong
Dark	BRIGHT	Bright
Soft	DETAIL	Sharp



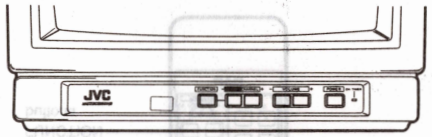
Note: When you wish to restore all adjustment modes to their scale's center position, use the AV STATUS/RESET button. For details, see "AV STATUS/RESET button" on page 17.

MENU BUTTON

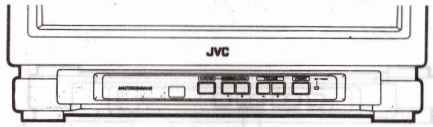
The "MENU" button selects a list of functions that can be programmed for operating the TV more conveniently. This function is possible only on the Remote Control.

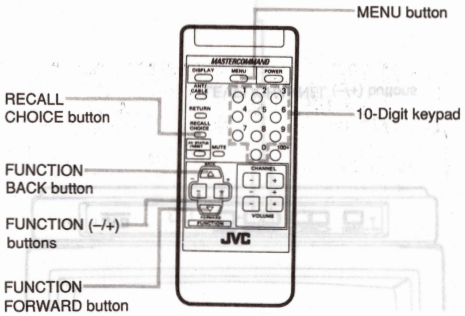
- Press the MENU button on the Remote Control to display the list of programmable convenience functions on the screen. The "MENU" consists of 3 pages. Press the MENU button repeatedly to display the pages in the sequence below.
- Press numbers "1" through "9" on the 10-digit keypad to select the corresponding function in the numbered "MENU".

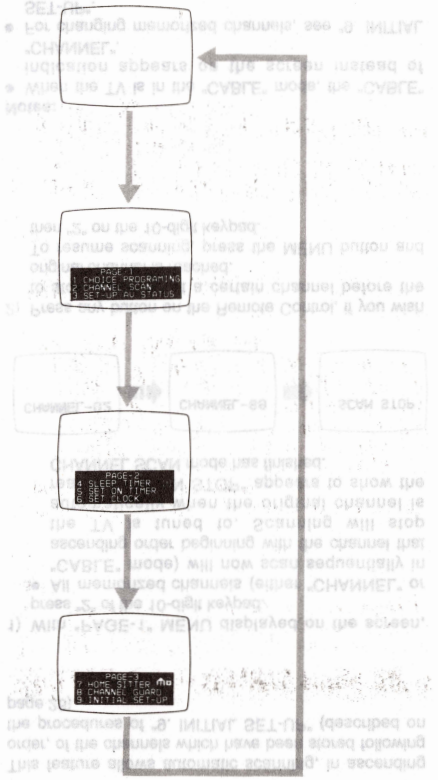
C-13CL3/C-13WL3



C-20BL3/C-20CL3
C-20RL3/C-20WL3







PAGE-1

1. CHOICE PROGRAMING

This function enables storing up to 5 frequently-viewed channels as "CHOICE channels", allowing immediate, direct access to the channel of your choice using the RECALL CHOICE button.

1) While in the channel select mode (either "CHANNEL" or "CABLE" mode), determine the channel you wish to preset as a CHOICE channel and display it on the screen.
(For example, press "0" and "9" to display "CHANNEL 09".)

2) With "PAGE-1" MENU displayed on the screen, press "1" of the 10-digit keypad.
The display will show:

3) Press a number (1 to 5) on the 10-digit keypad for the CHOICE channel number you wish to preset. Then, the following display will appear.
(For example, press "1" for storing "CHANNEL 09" as the "CHOICE 1" channel.)

4) With this display, you can store the TV station's call letters for handy reference along with its channel number. (Up to 4 letters can be stored.) If you choose to store the call letters, press "1". The following display will appear.

- If you choose not to store call letters, press "2" of the 10-digit keypad. The CHOICE LIST will appear to show that the CHOICE PROGRAMING mode has been disengaged.

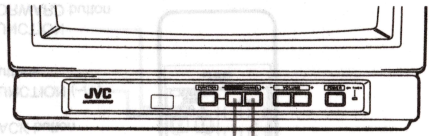
5) Press the FUNCTION FORWARD/BACK buttons for selecting each of the call letters to be stored. Available characters include the alphanumeric characters (26 English-language letters and 10 numerals), plus various punctuation marks (period, comma, etc.). Then, move the cursor to the next letter position by pressing the FUNCTION (–/+) buttons on the Remote Control. When finished selecting up to 4 call letters, press "1".
(For example, if you store the letters "JVC", keep the FUNCTION FORWARD or BACK button pressed until the letter "J" appears. Then, press the FUNCTION (+) button to move the cursor on letter position to the right. Press FUNCTION FORWARD or BACK to select the letter "V", then move the cursor to the right again with FUNCTION (+). In the same way, select "C", then press "1" to end the operation.)
The CHOICE LIST is displayed for a few seconds.

6) Repeat steps 1) through 5) to preset up to 5 CHOICE channels.

RECALL CHOICE button

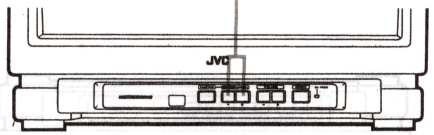
- Simply press the RECALL CHOICE button anytime you want to call up the list of preset CHOICE channels for convenient direct CHOICE channel selection.
While the list is on the screen, press the corresponding number of the 10-digit keypad to select the preferred channel.

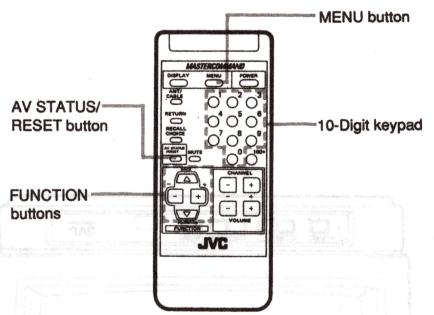
C-13CL3/C-13WL3



LEVEL/CHANNEL (–/+) buttons

C-20BL3/C-20CL3
C-20RL3/C-20WL3





2. CHANNEL SCAN

This feature allows automatic scanning, in ascending order, of the channels which have been stored following the procedures of "9. INITIAL SET-UP" (described on page 26).

1) With "PAGE-1" MENU displayed on the screen, press "2" of the 10-digit keypad.
- All memorized channels (either "CHANNEL" or "CABLE" mode) will now scan sequentially in ascending order beginning with the channel that the TV is tuned to. Scanning will stop automatically when the original channel is reached. "SCAN STOP" appears to show the CHANNEL SCAN mode has finished.

2) Press any button on the Remote Control, if you wish to stop scanning at a certain channel before the original channel is reached.
To resume scanning, press the MENU button and then "2" on the 10-digit keypad.

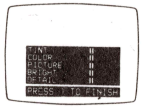
Notes:

- When the TV is in the "CABLE" mode, the "CABLE" indication appears on the screen instead of "CHANNEL".
- For changing memorized channels, see "9. INITIAL SET-UP".
- If you wish to start CHANNEL SCAN at a specific channel, first select the broadcast mode (CHANNEL or CABLE) then that channel number, and then follow instructions above.
- While actual CHANNEL SCAN is being performed, all front panel buttons become inoperable.

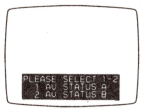
3. SET-UP AV STATUS

Your TV set incorporates the AV STATUS memory that can store 2 variations for preset picture adjustments, allowing you to change the picture tone to your preference depending on each source.

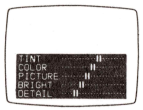
1) With "PAGE-1" MENU displayed on the screen, press "3" of the 10-digit keypad. The display will show:



2) Adjust the picture controls to your preference. Use the FUNCTION and/or LEVEL/CHANNEL buttons. When finished, press "1". The following display will appear.



3) Press "1" to store the setting as the "AV STATUS A". (Press "2" to store it as the "AV STATUS B".) Then the picture adjustment setting (items and their reference scales) appears for a few seconds.

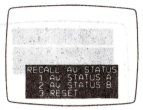


4) Repeat steps 1) through 3) for making another AV STATUS setting.

- When you wish to choose the preset AV STATUS, just press the AV STATUS/RESET button to choose either AV STATUS position. For details, see "AV STATUS/RESET button" on the right.

AV STATUS/RESET button

Use this button for choosing the preset AV STATUS or for resetting the picture adjustment item(s).
Press the AV STATUS/RESET button on the Remote Control.
The following display appears.



- Another pressing of the AV STATUS/RESET button resets all previously adjusted items to their center positions.

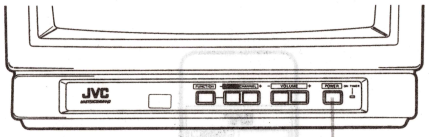
1. AV STATUS A
Press "1" of the 10-digit keypad for selecting AV STATUS A. The picture changes as preset for "AV STATUS A".

2. AV STATUS B
Press "2" for selecting AV STATUS B. The picture changes as preset for "AV STATUS B".

3. RESET
Press "3" when you wish to reset all adjusted items (TINT, COLOR, PICTURE, BRIGHT and DETAIL) back to their center positions at the same time. The on-screen display appears and changes as follows:

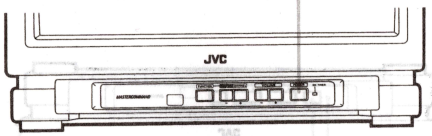
Note: While in this mode, the setting of the AV STATUS cannot be cancelled.

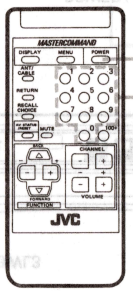
C-13CL3/C-13WL3



POWER button

C-20BL3/C-20CL3
C-20RL3/C-20WL3





POWER button

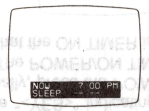
10-Digit keypad

PAGE-2

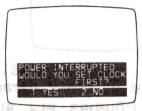
4. SLEEP TIMER

The "SLEEP TIMER" feature allows you to turn off your TV automatically at a preset time.

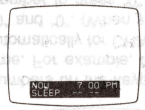
1) With "PAGE-2" (or "PAGE-1" or "PAGE-3") MENU displayed on the screen, press "4" of the 10-digit keypad.



- If the built-in clock has not been set to operate properly, the SLEEP TIMER will not function. In this case, the following display will appear on the screen to show that the clock requires adjustment.



Press "1" (YES) of the 10-digit keypad to adjust the clock. (If "2" (NO) is pressed, the warning message "YOU CANNOT OPERATE SLEEP TIMER!!" is displayed.)
Set the built-in clock. (See "6. SET CLOCK" on page 21 for details.) When the clock is adjusted, the message "THANK YOU!!" appears. Then, the following display appears to show that the SLEEP TIMER is now ready to be set.



2) Press the numbers on the keypad to set the desired switch-off time. The SLEEP TIMER can be set for up to 11 hours 59 minutes from the current time.
For example, if it is now 7:00 PM, and you want the TV to switch off automatically at 9:00 PM, press "9", "0" and "0". (The "AM/PM" setting is automatically done.) The selected time of "9:00 PM" appears.

- When you select "1" for hour setting (for example, "1:05 AM"), remember to press "0" first, then press "1", "0" and "5".

3) To cancel the SLEEP TIMER setting, press the current time (the current time setting of the TV's built-in clock).

Notes:

- If an invalid time is selected (for example: "5:87"), it will be rejected and the SLEEP TIMER must be reset properly.
- While the SLEEP TIMER is activated, if the POWER button is pressed to turn the power off and on again, the SLEEP TIMER will be cancelled.
- While the SLEEP TIMER is activated, if the power is disconnected (such as in the case of power failure, etc.) and reapplied later, the TV is turned off. When disconnected only for a couple of minutes, the SLEEP TIMER is reactivated, however, it turns the TV off later than the set time by the amount of the time of disconnection.
- The SLEEP TIMER may turn off the TV a little earlier than the preset time.
- When the remaining time reaches 1 minute, the message, "GOOD NIGHT", will be displayed and continue to blink until the power turns off automatically.

5. SET ON TIMER

The "ON TIMER" feature allows you to turn on your TV automatically at a preset time and specific channels. The ON TIMER is available for 2 different settings.

With "PAGE-2" (or "PAGE-1" or "PAGE-3") MENU displayed on the screen, press "5" of the 10-digit keypad. The display will show:

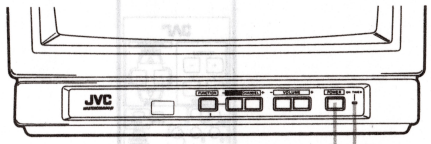
- At this time, if the display of "POWER INTERRUPTED/WOULD YOU SET CLOCK FIRST?" (which may appear during the SLEEP TIMER procedure) appears, it shows that the clock is not operating, and the ON TIMER will not function.
  Press "1" (YES) to set the clock. (If "2" (NO) is pressed, the warning message "YOU CANNOT OPERATE ON TIMER!!" is displayed.)
  Set the clock. See "6. SET CLOCK" on page 21 for details regarding clock setting. After the clock has been set, the massage "THANK YOU!!" appears to show that the clock has just been adjusted and the ON TIMER is now ready to be set.

Two different settings are possible. Press "1" or "2" to select the setting position. The display will show:

- The second from the bottom line shows the preset time if already previously set.

Continued on next page →

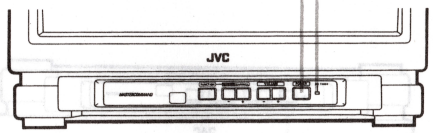
C-13CL3/C-13WL3

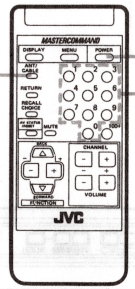


POWER button

POWER/ON TIMER indicator

C-20BL3/C-20CL3
C-20RL3/C-20WL3





POWER button

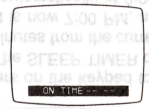
ANT/CABLE button

10-Digit keypad

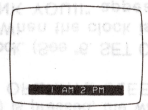
1) SET
Press "1" to start the ON TIMER for turning the TV on automatically at the preset time shown. "<YES>" appears to show that the ON TIMER has started.

2) CANCEL
Press "2" to cancel the setting. "<NO>" appears to show that the ON TIMER has been cancelled.

3) CHANGE
Press "3" to re-adjust the setting. Then, the following display appears.



Press the numbers on the keypad to set the desired switch-on time. For example, if you want the TV to switch on automatically for CHANNEL 12 at 7:00 AM, press "7", "0" and "0". (When you select "1" for hour setting, remember to press "0" first, then press "1".) The selected time of "7:00" appears and immediately the display changes to:



Then, press "1" to select the "AM" setting. (Press "2" to select the "PM" setting.) Then, the following display appears. Press "1" and "2" for specifying "CHANNEL 12".

Now the following display appears on the screen to show the ON TIMER is set to "7:00 AM, CHANNEL 12" with the "<YES>" indicating the ON TIMER has started. Finally, press the POWER button to turn the power off. The POWER/ON TIMER indicator remains lit to show that the ON TIMER is in operation.

Notes:

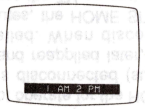
- If an invalid time is selected (for example: "17:70"), it will be rejected and the ON TIMER must be reset properly.
- First select the broadcast mode (CHANNEL or CABLE) of the channel you wish to set for the ON TIMER with the ANT/CABLE button on the Remote Control before entering the ON TIMER mode, since broadcast mode switching while in the ON TIMER will cancel the mode.
- After the ON TIMER has been properly set, it functions only once to turn on the TV's power. (It does not operate repeatedly every day at the same time as a serial timer.)
- Once the ON TIMER turns the TV on automatically, if the TV is not operated in any way, after 2 hours the TV will turn off automatically for safety. A single adjustment, even audio level adjustment or channel selection, will cancel this switch-off function.
- While the ON TIMER is activated, if the power is disconnected (such as in the case of power failure, etc.) and reapplied later, the ON TIMER is cancelled. When disconnected only for a couple of minutes, the ON TIMER is reactivated, however, it turns the TV on later than the set time by the amount of time of interruption.
- If the channel which has already been set as a "Guarded Channel" is selected, that channel is rejected and cannot be set for the ON TIMER. (For details of the Guarded Channels, refer to page 24.)

6. SET CLOCK

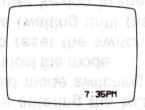
Your TV has a built-in clock. Set the clock as follows:

1) With "PAGE-2" (or "PAGE-1" or "PAGE-3") MENU displayed on the screen, press "6" of the 10-digit keypad. The display will show:

2) Then, press the numbers on the 10-digit keypad to set the current time. For example, if the present time is 7:35 PM, press "0", "7", "3" and "5" (or press "7", "3" and "5"). Then, the display changes to:



3) Press "2" to select the "PM" setting. (Press "1" to select the "AM" setting.) Then, the display changes to the following to show the current time is set and the clock starts operating.



Notes:

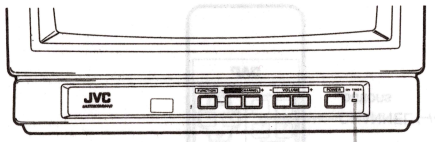
- If an invalid time is selected (for example: "17:70"), it will be rejected and the built-in clock must be reset properly.
- If you wish to set the clock precisely in step 3) above, press "2" (or "1") at the same instant of a time signal.
- The built-in clock may loose time depending on the manner in which the TV is used or the frequency of the power source. If the time difference becomes great, re-adjust the clock.
- If the power is disconnected (such as in the case of a power failure, etc.), and reapplied later, the clock will stop operating. (The clock status can be checked on screen. Press the DISPLAY button. If the clock has stopped, the message "CLOCK STOPPED" is displayed instead of the current time. See "DISPLAY button" on page 29 for detail.) When disconnected only for a couple of minutes, the clock is reactivated, however, it will be later than the actual time by the amount of time of interruption.

7. HOME SITTER

The "HOME SITTER" feature enables the TV to be turned on and off automatically at preset times every day.
With "PAGE-3" (or "PAGE-1" or "PAGE-2") MENU displayed on the screen, press "7" of the 10-digit keypad. The display will show:

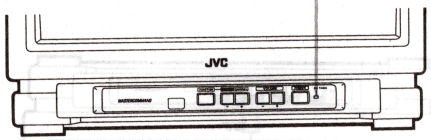
- At this time, if the display of "POWER INTERRUPTED/WOULD YOU SET CLOCK FIRST?" appears, it shows that the clock is not operating, and the HOME SITTER will not function.
  Press "1" (YES) to set the clock. (If "2" (NO) is pressed, the message "YOU CANNOT OPERATE HOME SITTER!!" is displayed.)
  Set the clock. See "SET CLOCK" on page 21 for details regarding clock setting. After setting the clock, the message "THANK YOU!!" appears to show that the clock has just been adjusted and the HOME SITTER is now ready to be set.

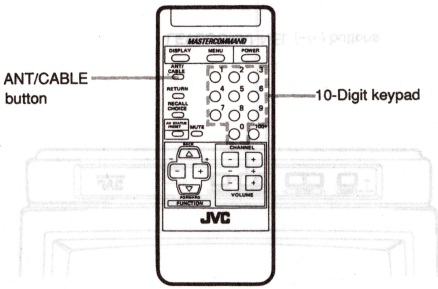
C-13CL3/C-13WL3



POWER/ON TIMER indicator

C-20BL3/C-20CL3
C-20RL3/C-20WL3





1) SET
Press "1" to place the HOME SITTER in standby. The ON/OFF time and channel number which have been previously set will be displayed. When the POWER button is pressed to turn the TV off, the POWER/ON TIMER indicator lights and "YES" appears on the screen to show that the HOME SITTER is in operation.

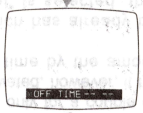
2) CANCEL
Press "2" to cancel the HOME SITTER. "NO" appears to show that the HOME SITTER has been cancelled.

3) CHANGE
Press "3" to re-adjust the HOME SITTER setting. Follow the on-screen displays to set the switch-on time, switch-off time and channel number, using the keypad.

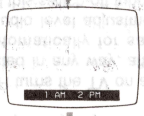
Set the switch-on time.

Select "AM" or "PM".

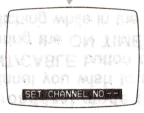
Set the switch-off time.



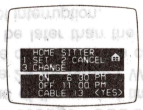
Select "AM" or "PM".



Set the channel number.



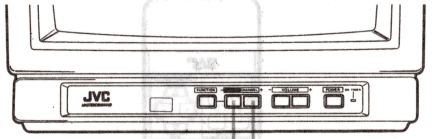
When the channel number is set, the display will show:



- This display shows that the HOME SITTER is set to switch the TV on at 6:30 PM, switch it off at 11:00 PM and the channel to be received is "CABLE 13".

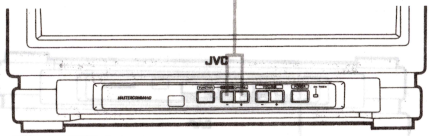
Notes:
- If an invalid time or channel number is selected, it will be rejected and it must be reset properly.
- First select the broadcast mode (CHANNEL or CABLE) of the channel you wish to set for the HOME SITTER with the ANT/CABLE button on the Remote Control before entering the HOME SITTER mode, since broadcast mode switching while in the HOME SITTER will cancel the mode.
- If you wish to reset the switch-on time only, stop keying in data (waiting until the on-screen display disappears) after keying in the AM/PM setting, or press keys other than the 10-digit keypad. And, if you wish to reset the switch-on and switch-off time only, the procedure is the same.
- The function that automatically turns the TV off for the ON TIMER, if no TV operation is performed after 2 hours, does not operate for the HOME SITTER.
- If the power is disconnected (such as in the power failure, etc.), and reapplied later, the HOME SITTER will be cancelled. When disconnected only for a couple of minutes, the HOME SITTER is reactivated, however, it turns the TV on and off later than the set time by the amount of time of interruption.
- If the channel which has already been set as a "Guarded Channel" is selected, that channel is rejected and cannot be set for the HOME SITTER. (For details of the Guarded Channels, see next page.)

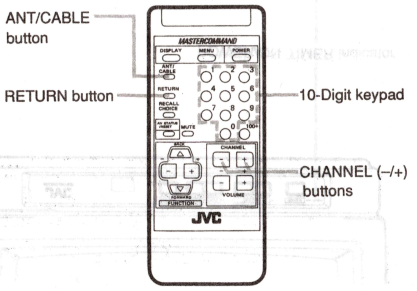
C-13CL3/C-13WL3



LEVEL/CHANNEL (–/+) buttons

C-20BL3/C-20CL3
C-20RL3/C-20WL3



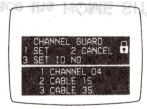


8. CHANNEL GUARD

The "CHANNEL GUARD" feature allows you to assign an "ID number" to specific channels of your choice, making them "Guarded Channels". This prevents these specific channels from being selected, unless the "ID number" is keyed in.

First select a channel you wish to set as a Guarded Channel. With "PAGE-3" (or "PAGE-1" or "PAGE-2") MENU displayed on the screen, press "8" of the 10-digit keypad. The display will show:

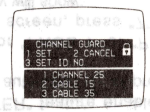
Then, press "0". The display changes to:



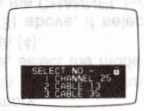
- Channel numbers displayed are the Guarded Channels, if already previously set.

1) SET
Press "1". The display changes to:

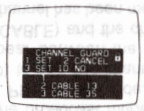
For example, if the current channel being received is "CHANNEL 25", and you wish to store this channel as Guarded Channel 1, then press "1". The display changes to show that CHANNEL 25 is now set as Guarded Channel 1.



2) CANCEL
Press "2" to cancel the Guarded Channel. The display will show:

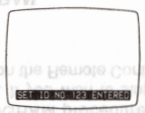


With this display on the screen, press the number of the Guarded Channel you wish to cancel from the list. For example, if you wish to cancel CHANNEL 25 (in this case, Guarded Channel 1) from the list, press "1". Then the display changes to show that CHANNEL 25 (Guarded Channel 1) has been cancelled.



3) SET ID NO.
Press "3" to set the ID number. The display will show:

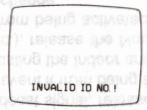
Press any 3 digits you wish to be the ID number. When completed, "ENTERED" appears to show that the ID number you have just keyed in is set.



Viewing Guarded Channels

1) Select the Guarded Channel. (If the Guarded Channel you wish to view is CHANNEL 25, press "2" and "5".) Then, the following display appears:

2) Key in the ID number using the keypad. The channel appears.
3) If the keyed-in ID number is incorrect, the display shows:

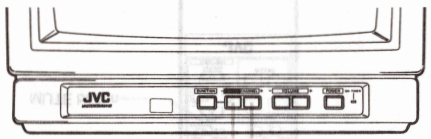


And the Guarded Channel you have selected cannot be seen.

Notes:

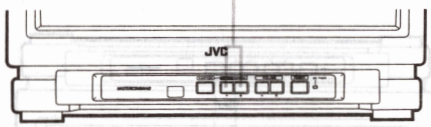
- If you wish to change the ID number, follow the steps of "3) SET ID NO.".
- If the power is disconnected (such as in the case of power failure, etc.), and reapplied later, the ID number is reset to "000".
- When performing the CHANNEL SCAN function, or selecting channels using the CHANNEL (–/+) buttons, the Guarded Channels are skipped.
- In the following cases, the Guarded Channel can be seen without keying in the ID number:
  - = When you press the RETURN button from a channel which has been selected immediately after viewing a Guarded Channel.
  - = When you press the ANT/CABLE button from a channel of a different broadcast mode (CHANNEL or CABLE) which has been selected immediately after viewing a Guarded Channel.
  - = When you press the CHANNEL (–/+) buttons on the Remote Control or LEVEL/CHANNEL (–/+) buttons on the front panel, while in the MANUAL PROGRAM mode of the INITIAL SET-UP (on MENU PAGE-3), if the selected channel which has already been ADDed happens to also be Guarded Channel.
  - = When you press "4" (CHANNEL UP) or "5" (CHANNEL DOWN) of the 10-digit keypad while in the MANUAL PROGRAM mode of the INITIAL SET-UP, if the Guarded Channel happens to also be the next higher or lower channel following the one to which you are presently tuned.
  - = While in the AUTO PROGRAM mode of the INITIAL SET-UP, if the AUTO PROGRAM is interrupted immediately when a Guarded Channel appears.
  - = When the channel which has already been set for the ON TIMER or HOME SITTER is set as a Guarded Channel.
- If you forgot the ID number which you have set, reset it.

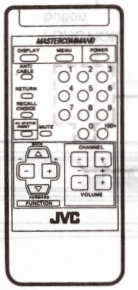
C-13CL3/C-13WL3



LEVEL/CHANNEL (–/+) buttons

C-20BL3/C-20CL3
C-20RL3/C-20WL3





10-Digit keypad

CHANNEL (–/+) buttons

9. INITIAL SET-UP

The INITIAL SET-UP feature allows you to perform basic settings for the TV status. This consists of Channel Memory (Auto/Manual), Message Style and Noise Mute.

Note: When performing Channel Memory (MANUAL PROGRAM), select an appropriate broadcast mode (either "CHANNEL" or "CABLE") before you select the INITIAL SET-UP mode.

With PAGE-3 (or PAGE-1 or PAGE-2) MENU displayed on the screen, press "9" of the 10-digit keypad. The display will show:

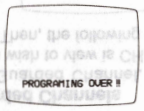
Press appropriate 10-digit key to select the item.

1) AUTO PROGRAM
This function allows memorizing the channels automatically to match the TV broadcasts and cable channels of your area. The memorized channels can be selected by the CHANNEL (–/+) buttons on the Remote Control or LEVEL/CHANNEL (–/+) buttons on the front panel, or in the CHANNEL SCAN mode, while skipping channels where there are no broadcasts.

Press "1" of the 10-digit keypad. The following display will appear and the program set-up procedure begins automatically.

When tuned to a channel in which a TV program is broadcasted, the following display appears and this channel is memorized.

When the AUTO PROGRAM procedure (scanning and memorizing) is completed, it will be indicated by the following display.



Notes:

- If the broadcast signals are weak, the channel may not be memorized. In this case, perform the MANUAL PROGRAM procedure.
- The AUTO PROGRAM procedure takes approximately 2 minutes. If you wish to stop this procedure, press any button on the Remote Control.

2) MANUAL PROGRAM

Similar to the AUTO PROGRAM function above, this is for memorizing channels, but it is performed manually. The result Manual Programing is also effective when performing up/down channel selection or CHANNEL SCAN.

Press "2". The display will show:

The current tuned-in channel

Simply follow the on-screen instructions.

Note: First select the broadcast mode before entering this MANUAL PROGRAM mode.

(1) Press "1" (ADD) to add this channel in memory. A bar "-" will appear between the broadcast mode (CHANNEL or CABLE) and the channel number to show that the channel has been memorized.

(2) Press "2" (ERASE) to erase this channel from memory, if you do not wish to preset it in memory or if no TV station is broadcasting on it. The bar between the broadcast mode and channel number will disappear.

(3) Press "4" (CHANNEL UP) or "5" (CHANNEL DOWN) to select the next higher or lower channel.

(4) Press "3" (END) when you have stored all required channels in memory.

(5) When you wish to store channels of the other broadcast mode, select the mode first, then repeat steps (1) through (4).

- In the step (3) above, if selecting channels is difficult, press the CHANNEL (–/+) buttons on the Remote Control.
- Be sure to perform these operations using the Remote Control.

3) MESSAGE STYLE

This function is for switching the black background of the on-screen display on and off (except for channel numbers and clock time).

Press "1" to select the on-screen display mode with a black background.

(VOLUME indication)

Press "2" to select the on-screen display mode without a black background.

(VOLUME indication)

4) NOISE MUTE

The NOISE MUTE feature allows replacing the "snowy" screen of vacant non-broadcast channels with a blue-blank screen; and, at the same time, muting the noisy sound.

Press "4". The display will show:

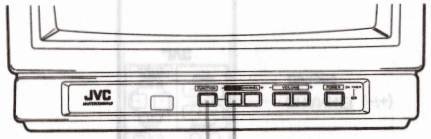
Press "1" to select the Noise Mute mode for a blue-blank screen with no sound.

Press "2" to release the mode. Screen is normal (without blue-blank screen) and sound can be heard.

Note: The Noise Mute mode can be activated only when either no signal is being input or when a weak signal is being received.

- If you wish to view a TV program having a weak broadcast signal, release the Noise Mute mode to prevent it from being activated.
- Before adjusting the indoor antenna (extending, rotating, etc.), release the Noise Mute mode to prevent it from being activated when the signal conditions change.
- When playing back VCR recordings or the like, picture and sound muting conditions might continue to occur for a few seconds after engaging the Play mode. Release the Noise Mute mode when necessary.

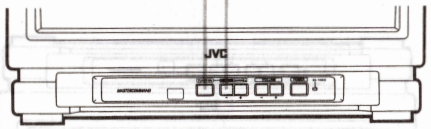
C-13CL3/C-13WL3

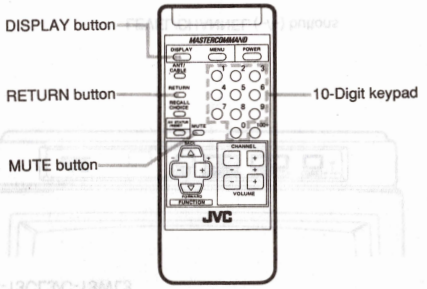


FUNCTION button

VOLUME (–) button

C-20BL3/C-20CL3
C-20RL3/C-20WL3





MASTER COMMAND SELF-DEMONSTRATION FEATURE

Your TV has a self-demonstration feature for the incorporated MASTER COMMAND system, demonstrating automatically all major functions of the MASTER COMMAND.

With PAGE-1 (or PAGE-2 or PAGE-3) MENU displayed, press "0" of the 10-digit keypad twice ("0 - 0"), or press the FUNCTION and VOLUME (–) buttons on the front panel simultaneously. The demonstration automatically begins in the following order. If you wish to stop the demonstration anytime while it is running, press any key on the Remote Control or on the front panel.

Demonstration procedure

SET CLOCK*
↓
Picture adjustment ←
↓
RESET (picture adjustment)
↓
CHOICE PROGRAMING
↓
SET-UP AV STATUS
↓
SLEEP TIMER
↓
SET ON TIMER
↓
HOME SITTER
↓
CHANNEL GUARD
↓
MESSAGE STYLE

* This SET CLOCK mode can operate only when the built-in clock is stopped.

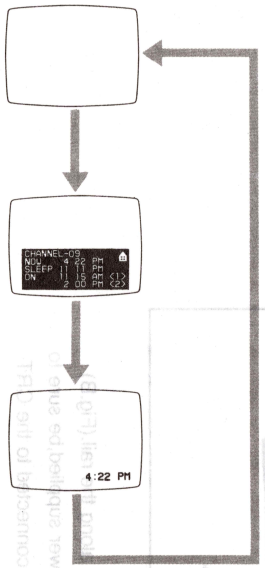
Caution: Operating this function adjusts the clock, timer settings, and all other functions to specific demonstration settings. Therefore, re-adjustment of these settings is required once the demonstration has been executed.

MORE USEFUL FUNCTIONS

DISPLAY button

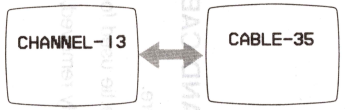
Press the DISPLAY button on the Remote Control. The channel number of the program you are now viewing, the SLEEP TIMER/ON TIMER settings, HOME SITTER setting, and the current time are displayed in the order as shown below by each pressing of the DISPLAY button. The current time remains displayed on the screen until the DISPLAY button is pressed again.

Note: If the SLEEP TIMER and/or ON TIMER and/or HOME SITTER is cancelled, their settings will not be displayed.



RETURN button

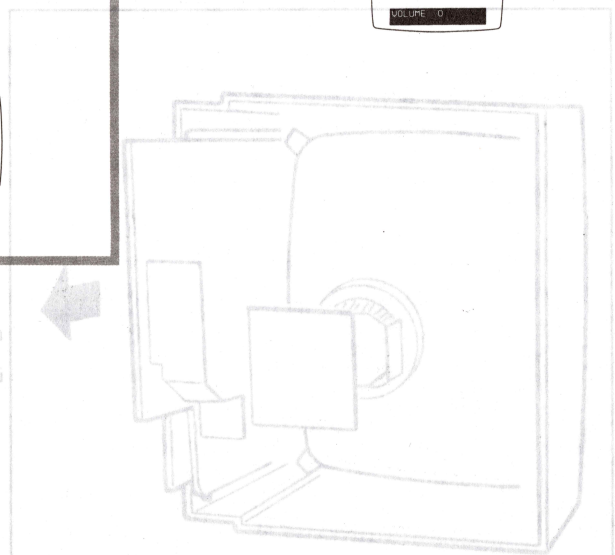
Press the RETURN button on the Remote Control.
The previously viewed channel will appear on the screen.
Press RETURN again to switch back to the original channel. Repeatedly pressing RETURN switches between these two channels.



MUTE button

Press the MUTE button on the Remote Control.
The sound of the TV program being viewed will be decreased to minimum and "VOLUME 0" will appear on the screen.
Press again to restore the sound.

Note: Changing the audio volume or channel number also restores the sound.



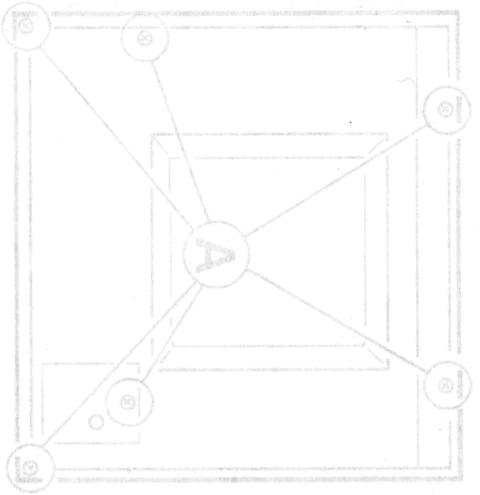
BEFORE YOU CALL FOR SERVICE

Be sure to review all the instructions written in this booklet. Then try to check according to the following chart.

PROBLEMS \ TRY THIS	Is the power cord plugged in ?	Check the AC outlet.	Check antenna (connections and wires).	Try another channel. If OK, station broadcast problem.	Move antenna in different direction.	Is it a black-and-white program ?	Adjust COLOR control.	Adjust TINT control.
Picture rolls vertically.			NO	NO	NO			
Noise bars on screen.								
Picture blurred.								
Lines or streaks in picture.								
Weak picture.							NO	NO
Wrong colors.								
No color.			NO	NO	NO	NO	NO	
Sound OK but picture poor.								
Picture OK but sound poor.			NO	NO	NO			
Neither picture nor sound.	NO							
Sound OK but no picture.				NO				
Weak or inoperable Remote Control.	• Press the POWER button on the front panel to switch the TV on and off, then check whether or not the Remote Control is working. • After replacing the batteries with new ones, check whether or not the Remote Control operates.							

THEN, CALL FOR SERVICE PERSONNEL.
Be sure to disconnect the power plug, and never try to service the TV yourself.

Important:
An outdoor antenna system of good quality and condition is recommended to eliminate many service problems.



(No.50684) 17

C-13CL3
C-13WL3

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

■ REMOVING REAR COVER

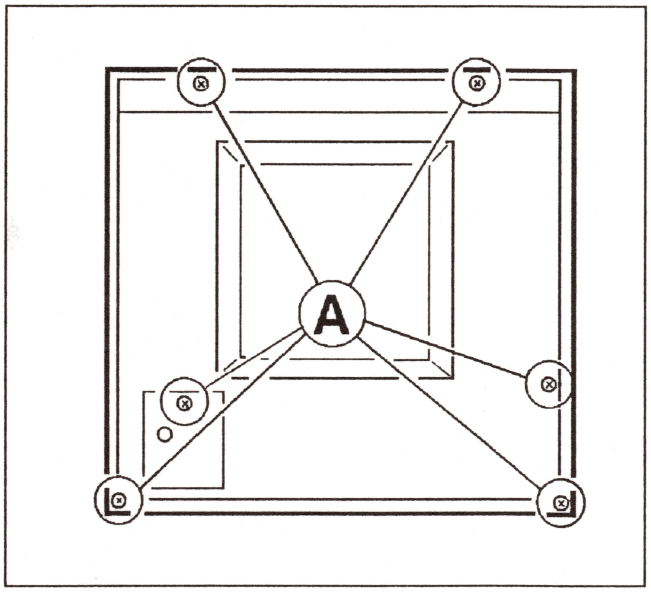


Fig. A

1. Unplug the power supply cord and remove the six screws Ⓐshown in Fig.A
* when reinstalling the rear cover,carefully push it inward after inserting the main PW board into the rear cover groove.

■ REMOVING MAIN PW BOARD

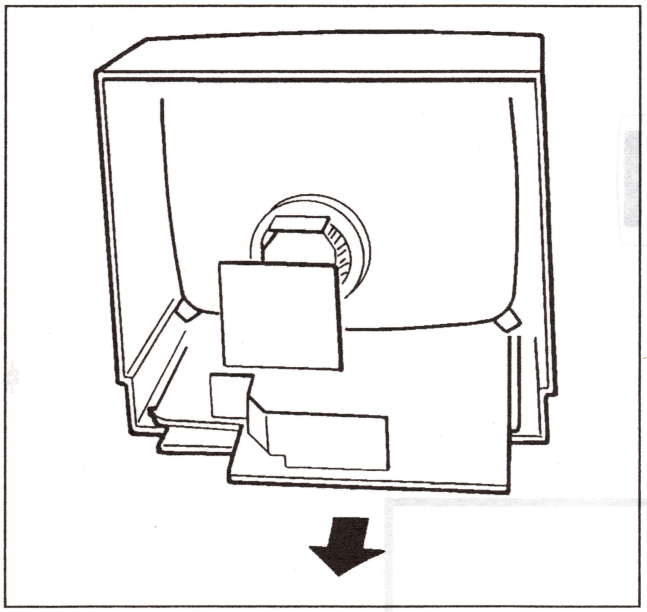


Fig. B

1. Withdraw the PW board backward along the rail.(Fig.B)
* When Conducting a check with power supplied,be sure to confirm that the CRT earth wire is connected to the CRT socket board and the chassis.

■ SETTING UP CHASSIS FOR CHECK/REPAIR

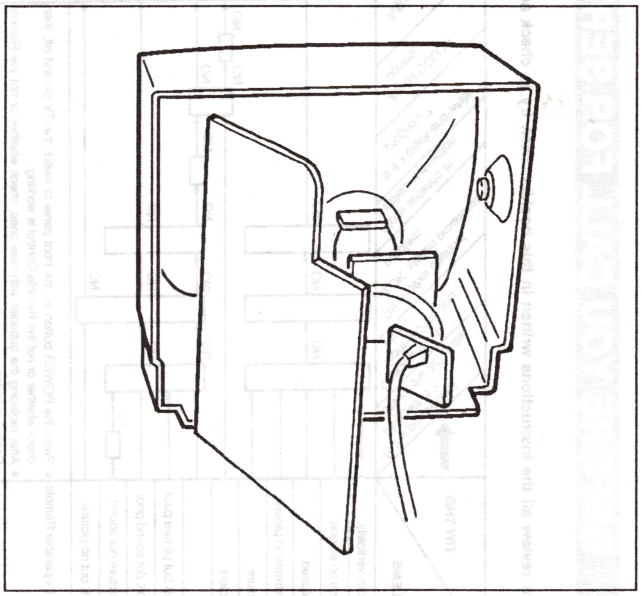


Fig. C

1. As shown in Fig.C,set the removed chassis upright.
* When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT socket board and the chassis..

■ WIRE CLAMPING AND CABLE TIES

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed,be sure to tie the wires with a new cable tie.

SERVICE ADJUSTMENTS

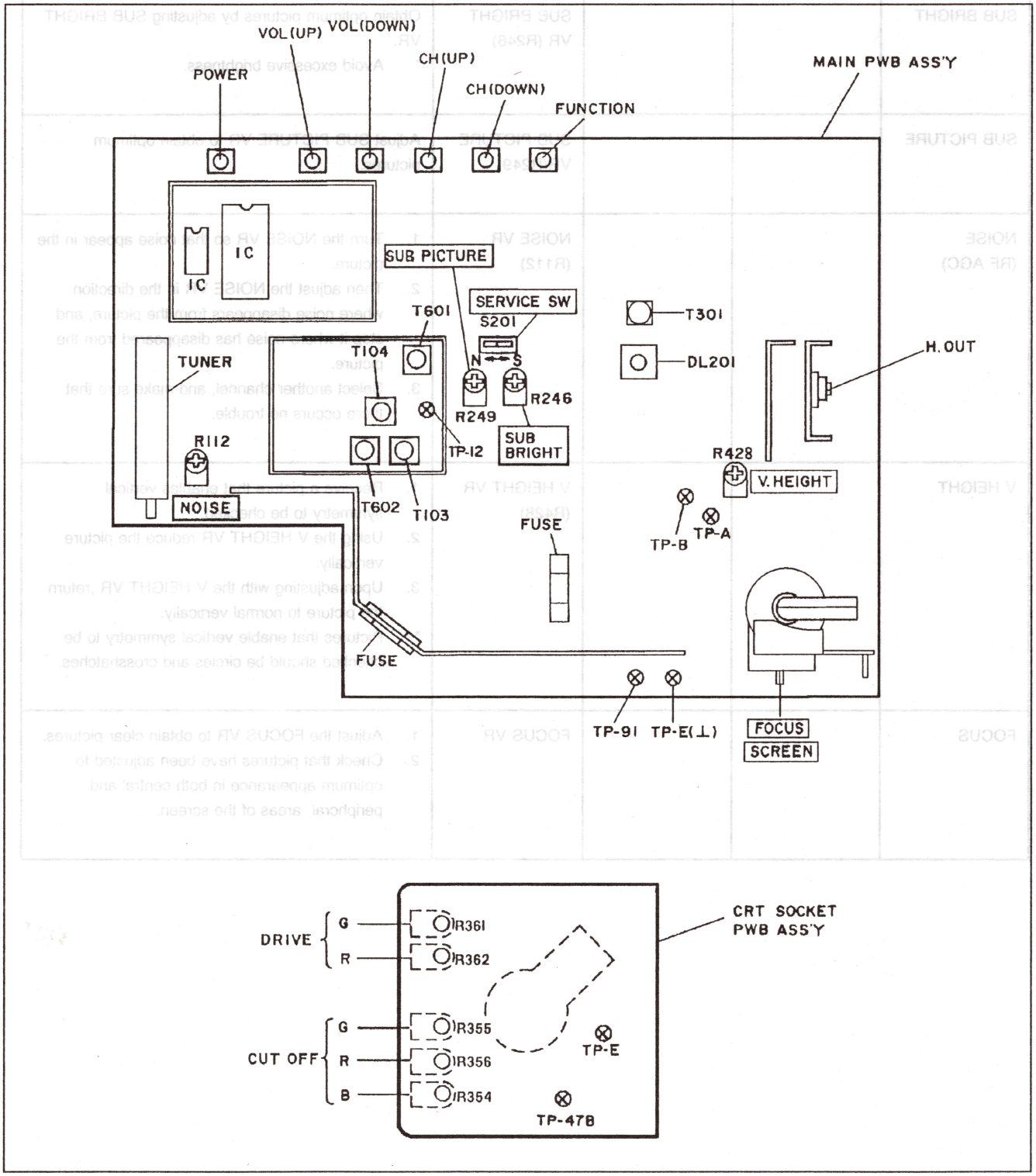
TOOLS AND FIXTURES FOR ADJUSTMENT

- DC VOLTMETER

PREPARATION BEFORE ADJUSTMENT

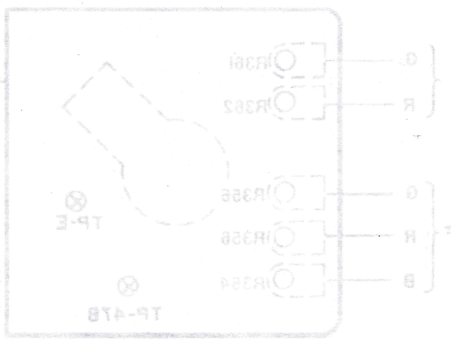
- Set The TINT, COLOR, PICTURE, BRIGHT, DETAIL, etc. to the standard settings.

ADJUSTMENT LOCATION



ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
B1 POWER SUPPLY	DC Voltmerer	TP-91		Connect a tester to TP-91 and TP-E(⊥) to check that the voltage is DC 129.3V. * The tester must have an internal resistance of 20kΩ /V or above.
SUB BRIGHT			SUB BRIGHT VR (R246)	Obtain optimum pictures by adjusting SUB BRIGHT VR. * Avoid excessive brightness.
SUB PICTURE			SUB PICTURE VR(R249)	Adjust SUB PICTURE VR to obtain optimum pictures.
NOISE (RF AGC)			NOISE VR (R112)	1. Turn the NOISE VR so that noise appear in the picture. 2. Then adjust the NOISE VR in the direction where noise disappears from the picture, and stop it where noise has disappeared from the picture. 3. Select another channel, and make sure that there occurs no trouble.
V HEIGHT			V HEIGHT VR (R428)	1. Receive a picture that enables vertical symmetry to be checked. 2. Using the V HEIGHT VR reduce the picture vertically. 3. Upon adjusting with the V HEIGHT VR ,return the picture to normal vertically. * Pictures that enable vertical symmetry to be checked should be circles and crosshatches.
FOCUS			FOCUS VR	1. Adjust the FOCUS VR to obtain clear pictures. 2. Check that pictures have been adjusted to optimum appearance in both central and periphcral areas of the screen.



HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing of the high voltage hold down circuit shown in Fig. 1.
This circuit shall be checked to operate correctly.

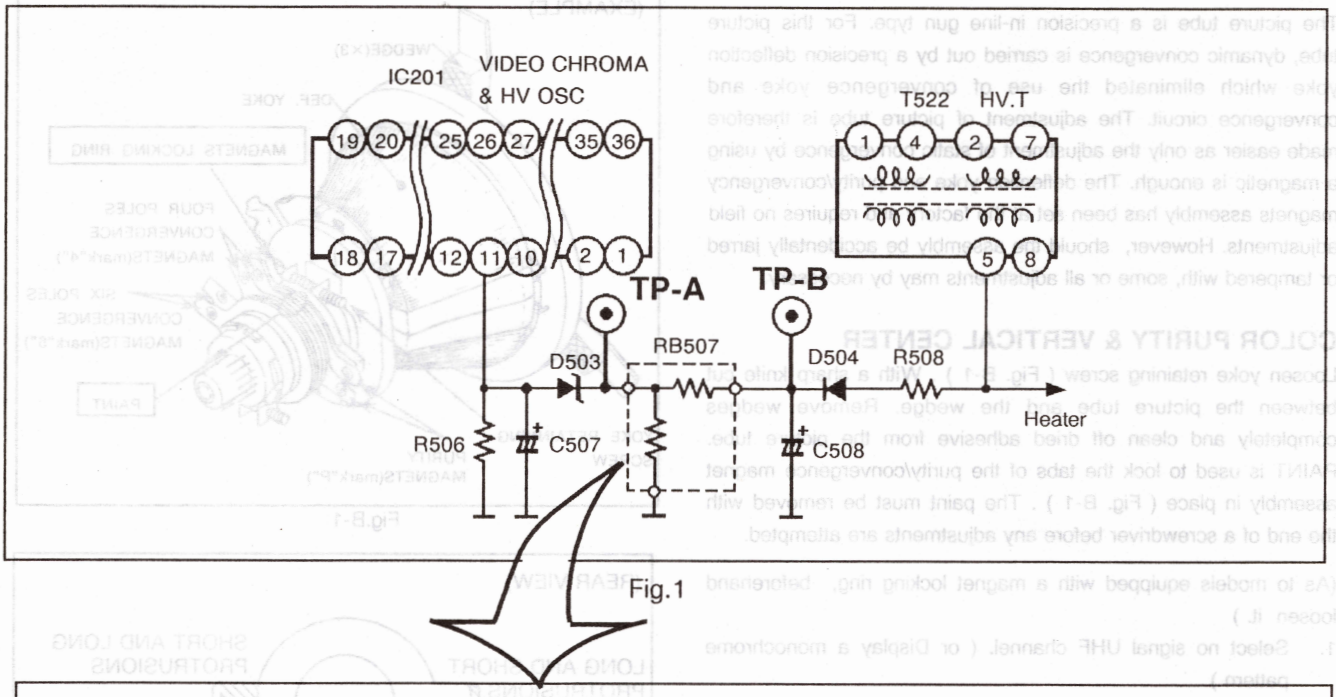


Fig.1

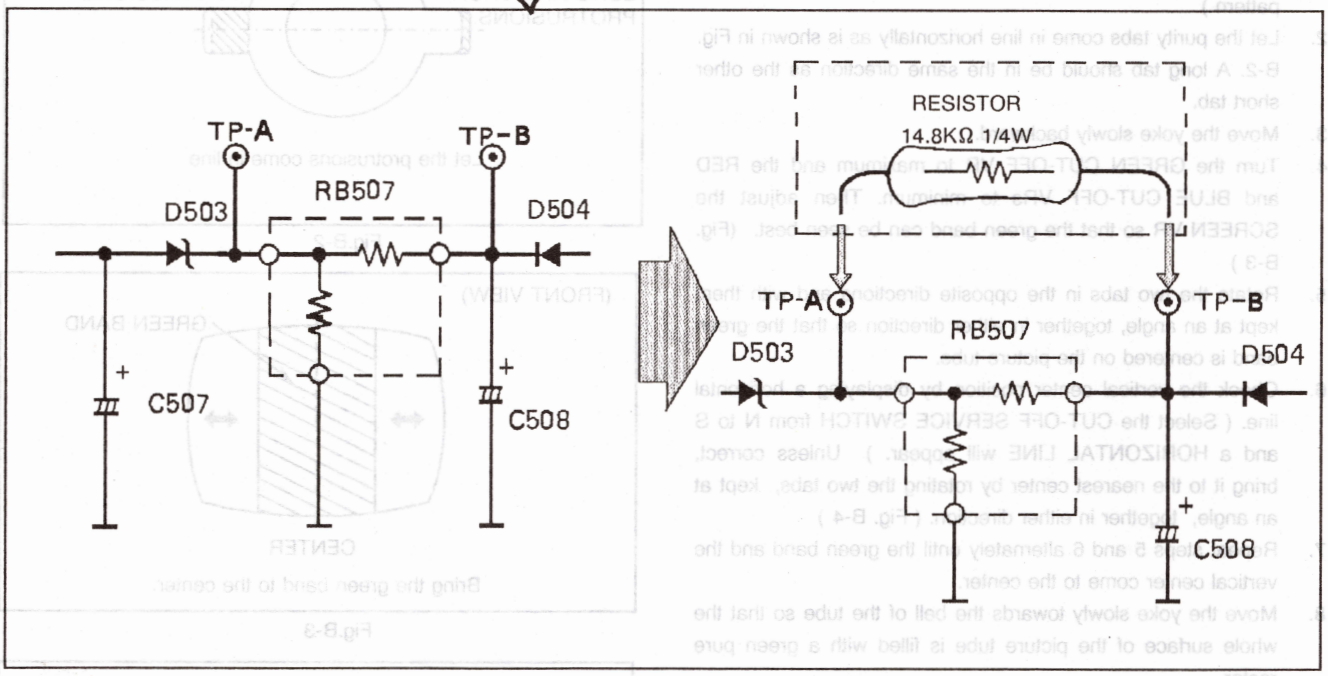


Fig.2

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT.

(1) Make sure that the power SW is at OFF.
(2) As shown in Fig. 2, set the resister 14.8kΩ 1/4W (between TP-A and TP-B).
(3) Turn the power SW ON.
(4) Make sure that the screen picture disappears.
(5) Turn the power SW OFF.
(6) Remove the resistor 14.8kΩ 1/4W from RB507 (between TP-A and TP-B).

PURITY, CONVERGENCE AND WHITE BALANCE

* The locations of SERVICE SWITCH, SCREEN VR, CUT-OFF VR and DRIVE VR are described in the ALIGNMENT LOCATION of SERVICE ADJUSTMENT or the SCHEMATIC DIAGRAM.

PICTURE TUBE

The picture tube is a precision in-line gun type. For this picture tube, dynamic convergence is carried out by a precision deflection yoke which eliminated the use of convergence yoke and convergence circuit. The adjustment of picture tube is therefore made easier as only the adjustment of static convergence by using a magnetic is enough. The deflection yoke and purity/convergency magnets assembly has been set at the factory and requires no field adjustments. However, should the assembly be accidentally jarred or tampered with, some or all adjustments may by necessary.

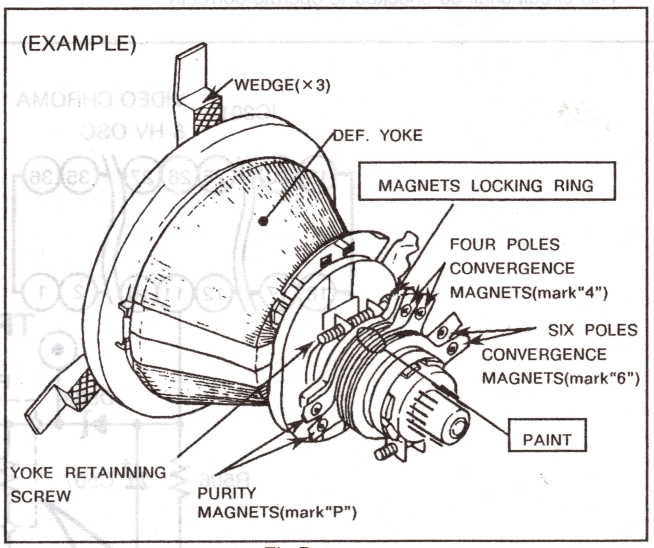


Fig.B-1

COLOR PURITY & VERTICAL CENTER

Loosen yoke retaining screw (Fig. B-1) . With a sharp knife cut between the picture tube and the wedge. Remove wedges completely and clean off dried adhesive from the picture tube. PAINT is used to lock the tabs of the purity/convergence magnet assembly in place (Fig. B-1) . The paint must be removed with the end of a screwdriver before any adjustments are attempted.

(As to models equipped with a magnet locking ring, beforehand loosen it.)

1. Select no signal UHF channel. (or Display a monochrome pattern)
2. Let the purity tabs come in line horizontally as is shown in Fig. B-2. A long tab should be in the same direction as the other short tab.
3. Move the yoke slowly backward.
4. Turn the GREEN CUT-OFF VR to maximum and the RED and BLUE CUT-OFF VRs to minimum. Then adjust the SCREEN VR so that the green band can be seen best. (Fig. B-3)
5. Rotate the two tabs in the opposite directions and with them kept at an angle, together in either direction so that the green band is centered on the picture tube.
6. Check the vertical center position by displaying a horizontal line. (Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.) Unless correct, bring it to the nearest center by rotating the two tabs, kept at an angle, together in either direction. (Fig. B-4)
7. Repeat steps 5 and 6 alternately until the green band and the vertical center come to the center.
8. Move the yoke slowly towards the bell of the tube so that the whole surface of the picture tube is filled with a green pure raster.
9. Turning RED or BLUE CUT-OFF VR to maximum and GREEN CUT-OFF VR to minimum, make sure of a red or blue pure raster.
10. Secure yoke retaining screw (do not install wedges at this time) .

(As to models equipped with a magnet locking ring, secure it and keep six magnets from moving even if it is touched slightly.)

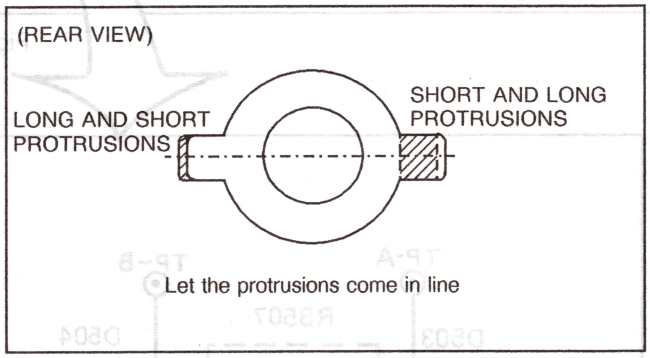


Fig.B-2

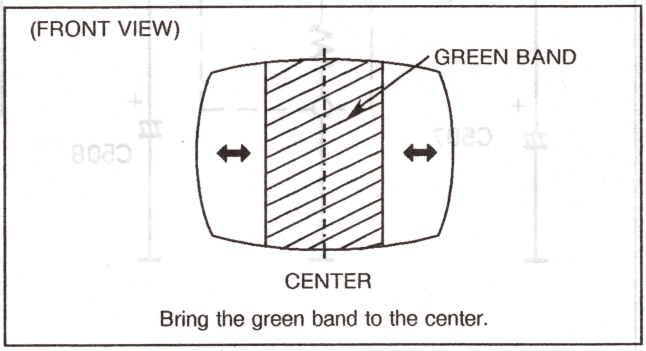


Fig.B-3

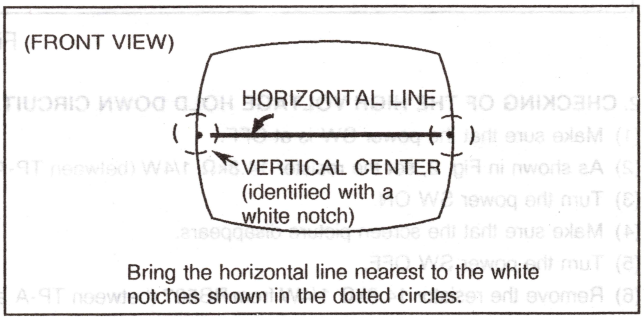


Fig.B-4

STATIC CONVERGENCE & DYNAMIC CONVERGENCE

1. Connect a crosshatch generator to the input terminals and adjust BRIGHTNESS and CONTRAST control for a distinct pattern.
2. Adjust the convergence around the edges of the picture tube by tilting the yoke, up-down and left-right, and temporarily install one wedge at the top of the yoke. (Fig. B-7, 8, 9)
3. Rotate the front pair of tabs (four pole convergence magnet) as a unit to minimize the separation of the red and blue lines around the center of the screen. To adjust the convergence of red and blue, vary the angle between the tabs (Fig. B-5)
4. Rotate the rear pair of tabs (six pole convergence magnets) as a unit to minimize the separation of the magenta (R/B) and green lines. (Fig. B-6)
5. Adjust the spacing of the rear tabs to converge the magenta and green lines.
6. Apply paint to fix six magnets.
   (As to models equipped with a magnet locking ring, tighten it.)
7. Remove the wedge installed temporarily on the yoke.
8. Tilting the angle of the yoke up, down and sideways, and adjust the yoke so as to obtain the circumference convergence. (Fig. B-8, 9)
9. Insert wedges to the position as shown in Fig. B-10 to obtain the best circumference convergence.
10. Wedge has a backing of double sided adhesive tape. Therefor, tear off one side of adhesive tape, and fix the wedges.
11. White balance adjustment (Black & White tracking) can now be performed.

WHITE BALANCE ADJUSTMENT

(Black and White Tracking)

1. Display a monochrome pattern.
2. Set the RED and GREEN DRIVE VRs for their mechanical center.
3. Turn the RED, GREEN and BLUE CUT-OFF VRs and the SCREEN VR fully counterclockwise.
4. Display a horizontal line. (Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.)
5. Turn SCREEN VR slowly clockwise until a very faint horizontal line appears.
6. Turn the CUT-OFF VR of the color which has appeared first, clockwise by about 10°and then adjust the SCREEN VR again so that the color may shine faintly.
7. Turn the other color CUT-OFF VRs slowly clockwise until a reasonable white line appears.
8. Return the monochrome pattern. (When returning a monochrome pattern select the CUT-OFF SERVICE SWITCH from S to N and a monochrome pattern will appear.)
9. Adjust the RED and GREEN DRIVE VRs for best white highlights.

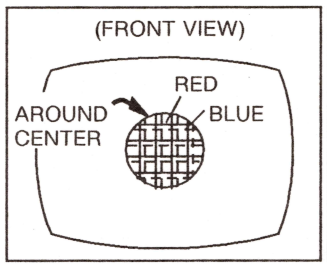


Fig.B-5

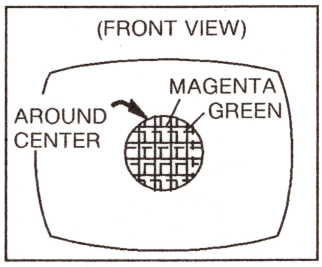


Fig.B-6

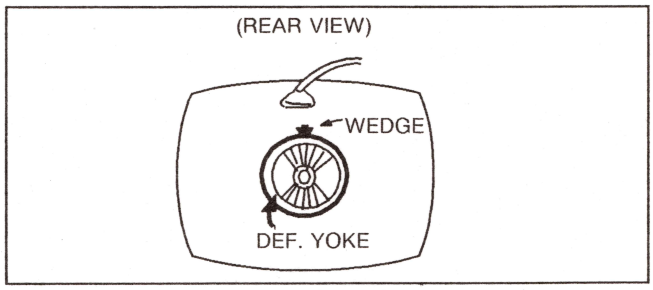


Fig.B-7

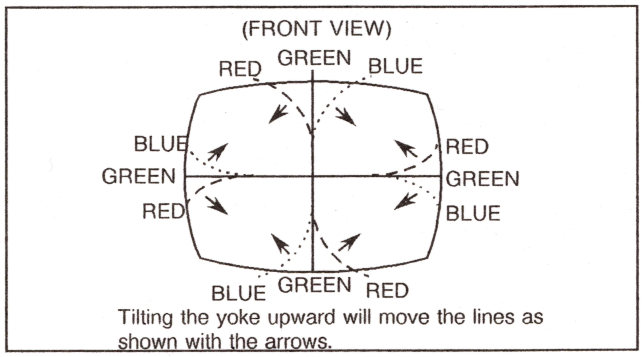


Fig.B-8

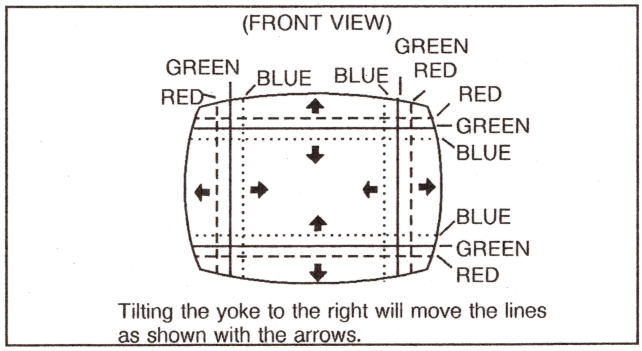


Fig.B-9

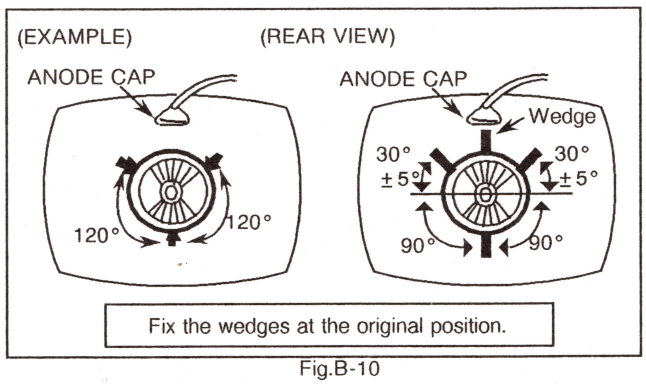


Fig.B-10

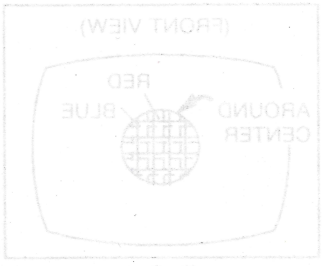


Fig.B-5

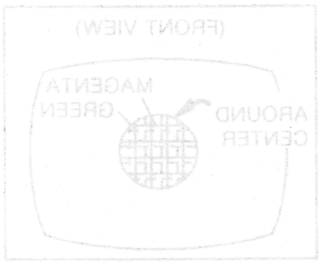


Fig.B-6

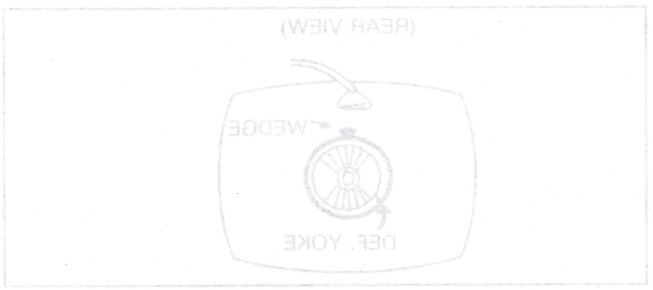


Fig.B-7

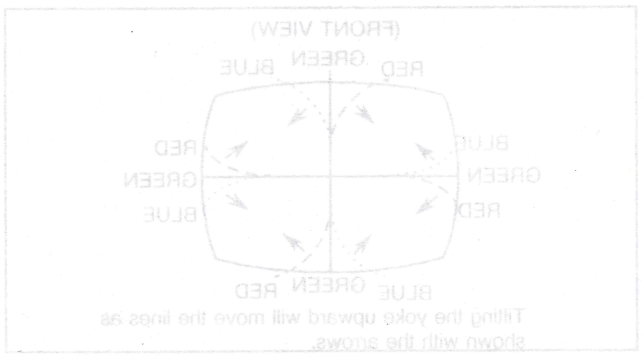


Fig.B-8

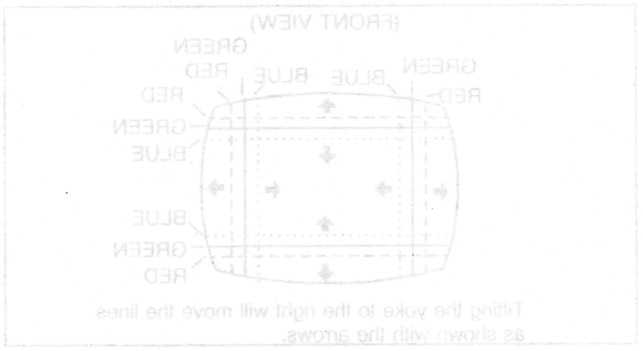


Fig.B-9

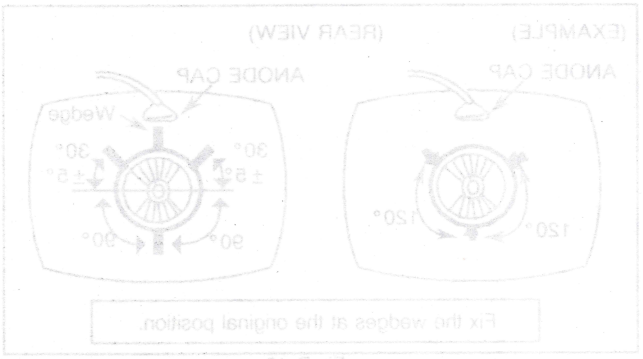


Fig.B-10

PARTS LIST

CAUTION

- The parts marked ⚠ are very important for the safety. When replacing these parts, be sure to use specified ones to secure the safety and performance.
- The module circuit board is supplied together with the assembly, but the parts which do not have the drawing in this Parts List, P. W. Board Ass'y and the Parts No. columns of which are filled with lines —— . will not be supplied.
- As a rule, the resistors and capacitors which are indicated as shown in (NOTE 2) "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board.
  When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to (NOTE 2).

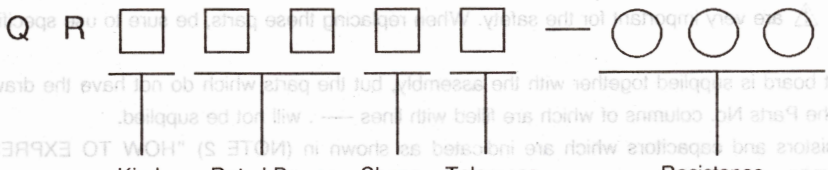
(NOTE 1) ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% - 10%	+50% - 10%	+80% - 20%	+100% - 0%

(NOTE 2) HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



Symbol	Part Name
C	COMP.R
D	C R
S	CH MG R

Symbol	Rated Power
0 1	1 w
1 2	1/2 w
1 4	1/4 w
1 6	1/6 w
1 8	1/8 w

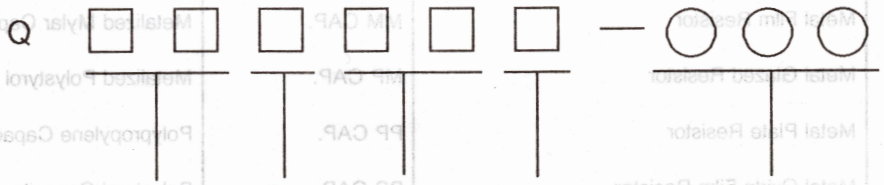
Symbol	Shape
1	Straight lead
8	Chip

Indicate with first two-figure expressed by Ω and following 0.
please note that,in case of resistance less than 10 Ω, a letter "R"will be effective as point.

EX.

2.2 Ω	=	2R2
470 Ω	= 47×10^1 →	471
150kΩ	= 15×10^4 →	154

■ CAPACITOR



Symbol	Part Name
CS	C CAP.
CS	CH C CAP.
ET	E CAP.
FM	M CAP.

5Figure / 6Figure	0	1	2
A		10V	100V
C		16V	160V
D			200V
E		25V	250V
H		50V	500V
J	6.3V	63V	
V		35V	

Indicate with first two-figure expressed by pF and following 0.
Please note that,in case of capacitance less than 10 pF a letter "R" will be effective as point.

EX

5pF	=		5R0
1000pF	=	10×10^2 →	102
47μF	=	47×10^6 →	476

Symbol	Shape
1	Straight lead
1	Leads in the same direction
8	Chip
A	Leads in the same direction (compact part)

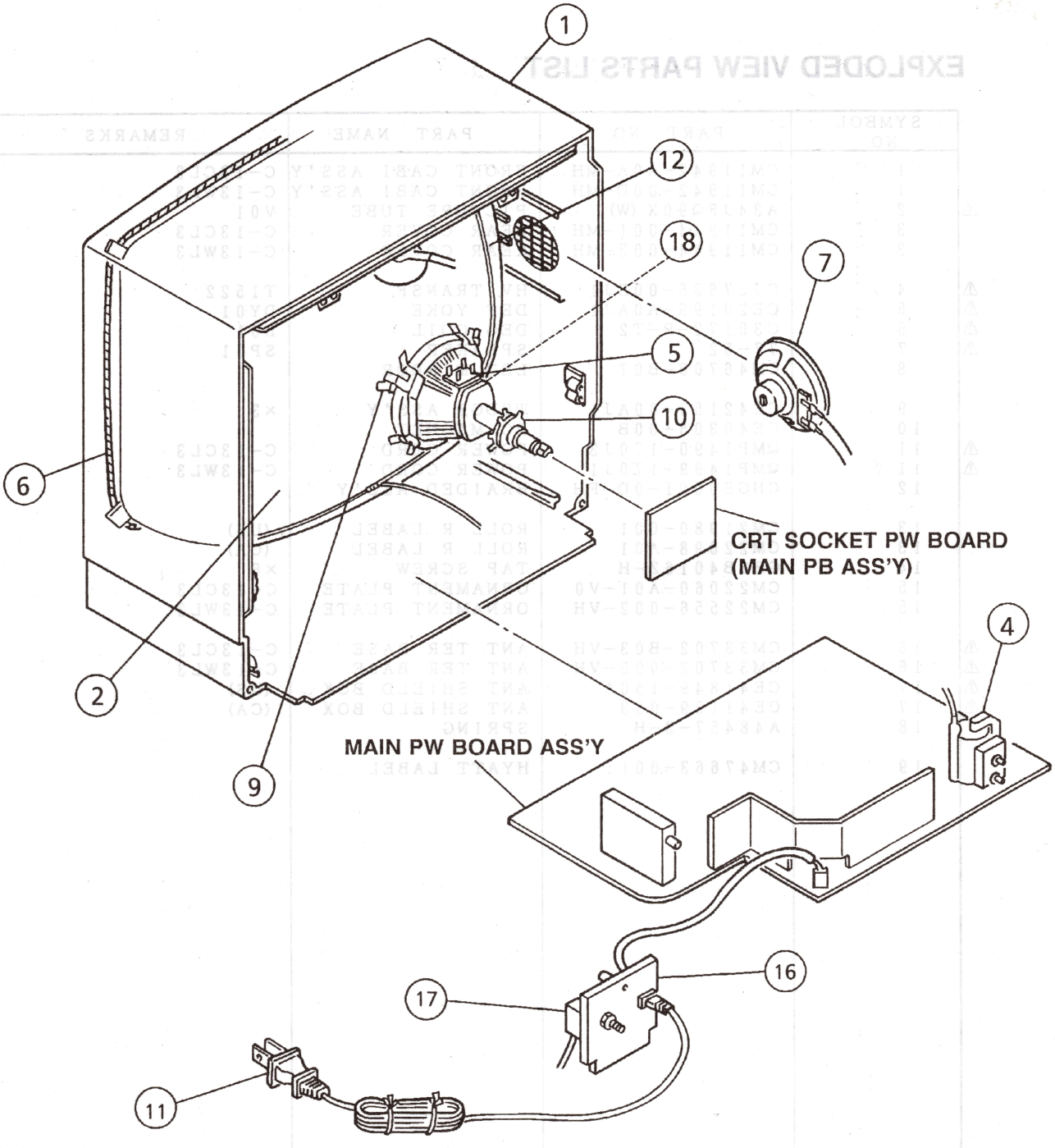
USING P.W. BOARD

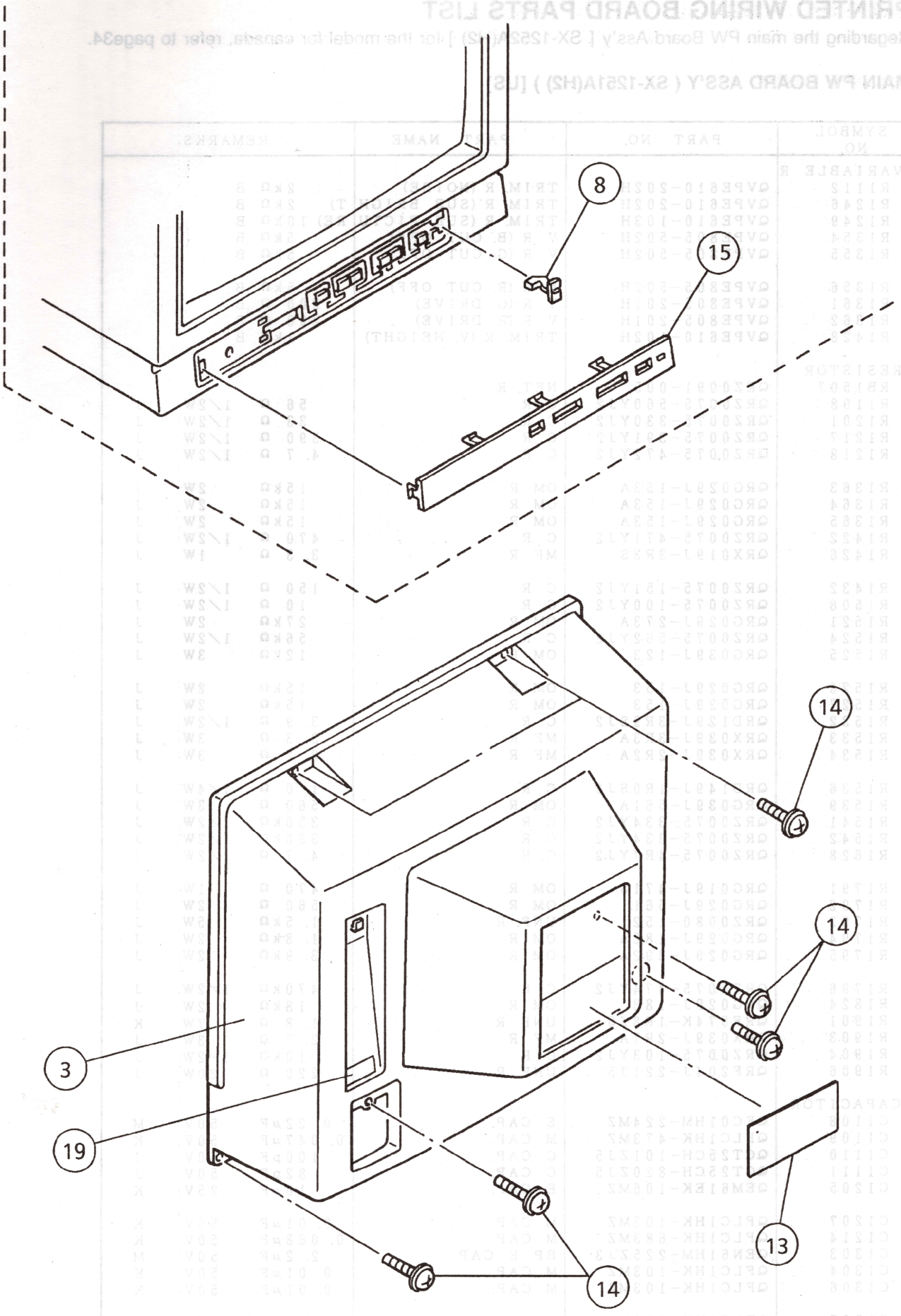
Model / P.W.B ASS'Y	America Models [US]	Canada Models [CA]
	C-13CL3 C-13WL3	C-13CL3 C-13WL3
MAIN P.W. ASS'Y	SX-1251A(H2)	SX-1252A(H2)

EXPLODED VIEW PARTS LIST

	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	1	CM11942-A0A-MH	FRONT CABI ASS'Y	C-13CL3
	1	CM11942-00D-MH	FRONT CABI ASS'Y	C-13WL3
⚠	2	A34JFQ90X (W)	PICTURE TUBE	V01
	3	CM11944-001-MH	REAR COVER	C-13CL3
	3	CM11944-003-MH	REAR COVER	C-13WL3
⚠	4	CJ27536-00BJ1	HV TRANSF.	T1522
⚠	5	CE20199-A0AJ1	DEF YOKE	DY01
⚠	6	C30172-R-T2	DEG COIL	L01
⚠	7	77-52	SPEAKER	SP01
	8	CM46700-B01	LED MIRROR	
	9	CE42153-00AJ1	WEDGE ASS'Y	×3
	10	CE40305-00B	PC MAGNET	
⚠	11	QMP1490-170J3	POWER CORD	C-13CL3
⚠	11	QMP1499-170J1	POWER CORD	C-13WL3
	12	CHGB0001-0D-FH	BRAIDED ASS'Y	
	13	CM21980-001	ROLL R LABEL	(US)
	13	CM22098-A01	ROLL R LABEL	(CA)
	14	GBSB4016Z-H	TAP SCREW	×6
	15	CM22060-A01-V0	ORNAMENT PLATE	C-13CL3
	15	CM22556-002-VH	ORNAMENT PLATE	C-13WL3
⚠	16	CM33702-B03-VH	ANT TER BASE	C-13CL3
⚠	16	CM33702-005-VH	ANT TER BASE	C-13WL3
⚠	17	CE41849-150A	ANT SHIELD BOX	(US)
⚠	17	CE41139-003	ANT SHIELD BOX	(CA)
	18	A48457-3-H	SPRING	
	19	CM47663-001	HYATT LABEL	

EXPLODED VIEW

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PRINTED WIRING BOARD PARTS LIST

Regarding the main PW Board Ass'y [SX-1252A(H2)] for the model for canada, refer to page34.

MAIN PW BOARD ASS'Y (SX-1251A(H2)) [US]

	SYMBOL NO.	PART NO.	PART NAME	REMARKS		
	VARIABLE R					
	R1112	QVPE610-202H	TRIM. R (NOISE)	2kΩ	B	
	R1246	QVPE610-202H	TRIM. R (SUB BRIGHT)	2kΩ	B	
	R1249	QVPE610-103H	TRIM. R (SUB PICTURE)	10kΩ	B	
	R1354	QVPE805-502H	V R (B. CUT OFF)	5kΩ	B	
	R1355	QVPE805-502H	V R (G. CUT OFF)	5kΩ	B	
	R1356	QVPE805-502H	V R (R. CUT OFF)	5kΩ	B	
	R1361	QVPE805-201H	V R (G. DRIVE)	200Ω	B	
	R1362	QVPE805-201H	V R (R. DRIVE)	200Ω	B	
	R1428	QVPE610-102H	TRIM. R (V. HEIGHT)	1kΩ	B	
	RESISTOR					
⚠	RB1507	QRZ0091-005	NET. R			
	R1108	QRZ0075-560YJ2	C R	56Ω	1/2W	J
	R1201	QRZ0075-330YJ2	C R	33Ω	1/2W	J
	R1217	QRZ0075-391YJ2	C R	390Ω	1/2W	J
	R1218	QRZ0075-472YJ2	C R	4.7Ω	1/2W	J
⚠	R1363	QRG029J-153A	OM R	15kΩ	2W	J
⚠	R1364	QRG029J-153A	OM R	15kΩ	2W	J
⚠	R1365	QRG029J-153A	OM R	15kΩ	2W	J
	R1422	QRZ0075-471YJ2	C R	470Ω	1/2W	J
	R1426	QRX019J-3R3S	MF R	3.3Ω	1W	J
	R1432	QRZ0075-151YJ2	C R	150Ω	1/2W	J
⚠	R1508	QRZ0075-100YJ2	C R	10Ω	1/2W	J
⚠	R1521	QRG029J-273A	OM R	27kΩ	2W	J
	R1524	QRZ0075-562YJ2	C R	56kΩ	1/2W	J
⚠	R1525	QRG039J-123	OM R	12kΩ	3W	J
⚠	R1526	QRG029J-153	OM R	15kΩ	2W	J
⚠	R1527	QRG029J-153	OM R	15kΩ	2W	J
⚠	R1532	QRD129J-3R9SJ2	C R	3.9Ω	1/2W	J
⚠	R1533	QRX039J-3R3A	MF R	3.3Ω	3W	J
⚠	R1534	QRX039J-2R2A	MF R	2.2Ω	3W	J
⚠	R1536	QRD149J-1R0SJ2	C R	1.0Ω	1/4W	J
⚠	R1539	QRG039J-561A	OM R	560Ω	3W	J
⚠	R1541	QRZ0075-334YJ2	C R	330kΩ	1/2W	J
⚠	R1542	QRZ0075-334YJ2	C R	330kΩ	1/2W	J
	R1628	QRZ0075-4R7YJ2	C R	4.7Ω	1/2W	J
⚠	R1791	QRG019J-471S	OM R	470Ω	1W	J
⚠	R1792	QRG029J-561	OM R	560Ω	2W	J
⚠	R1793	QRZ0080-152	UNF. R	1.5kΩ	5W	J
⚠	R1794	QRG029J-182A	OM R	1.8kΩ	2W	J
⚠	R1795	QRG029J-392A	OM R	3.9kΩ	2W	J
⚠	R1796	QRZ0075-474YJ2	C R	470kΩ	1/2W	J
⚠	R1824	QRG029J-183	OM R	18kΩ	2W	J
⚠	R1901	QRF074K-1R8J5	UNF R	1.8Ω	7W	K
⚠	R1903	QRX039J-2R7A	MF R	2.7Ω	3W	J
⚠	R1904	QRZ0075-103YJ2	C R	10kΩ	1/2W	J
⚠	R1906	QRF204J-221J5	UNF R	220Ω	20W	J
	CAPACITOR					
	C1108	QEC01HM-224MZ	E CAP.	0.22μF	50V	M
	C1109	QFLC1HK-473MZ	M CAP.	0.047μF	50V	K
	C1110	QCT25CH-101ZJ5	C CAP.	100pF	50V	J
	C1111	QCT25CH-820ZJ5	C CAP.	82pF	50V	J
	C1205	QEM61EK-106MZ	E CAP.	10μF	25V	K
	C1207	QFLC1HK-103MZ	M CAP.	0.01μF	50V	K
	C1214	QFLC1HK-683MZ	M CAP.	0.068μF	50V	K
	C1303	QEN61HM-225ZJ3	BP E CAP.	2.2μF	50V	M
	C1304	QFLC1HK-103MZ	M CAP.	0.01μF	50V	K
	C1306	QFLC1HK-103MZ	M CAP.	0.01μF	50V	K
	C1307	QFLC1HK-563MZ	M CAP.	0.056μF	50V	K

	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	CAPACITOR			
	C1308	QFLC1HK-103MZ	M CAP.	0.01μF 50V K
	C1313	QFLC1HK-473MZ	M CAP.	0.047μF 50V K
	C1357	QCZ0121-102A	C CAP.	1000pF 3kV P
	C1401	QEM61HK-225MZ	E CAP.	2.2μF 50V K
	C1421	QFN31HK-682ZJ1	M CAP.	6800pF 50V K
⚠	C1423	QETC1VM-107ZJ5	E CAP.	100μF 35V M
	C1424	QEHB1CM-108M	E CAP.	1000μF 16V M
	C1426	QFV71HJ-564MZ	TF CAP.	0.56μF 50V J
	C1427	QFLC1HK-153MZ	M CAP.	0.015μF 50V K
	C1429	QFLC1HK-393MZ	M CAP.	0.039μF 50V K
	C1501	QFLC1HK-183MZ	M CAP.	0.018μF 50V K
	C1502	QEHC1HM-475MZ	E CAP.	4.7μF 50V M
	C1503	QFLC1HK-103MZ	M CAP.	0.01μF 50V K
	C1504	QFLC1HK-223MZ	M CAP.	0.022μF 50V K
⚠	C1508	QETC1VM-107ZJ5	E CAP.	100μF 35V M
	C1509	QFLC1HK-242MZ	M CAP.	2400pF 50V K
	C1523	QFN32DK-103J1	M. M. CAP.	0.01μF 200V K
⚠	C1524	QFZ0081-6301S	M P P CAP.	6300pF 1600V ±3%
⚠	C1526	QFZ0120-474S	M P P CAP.	0.47μF 200V ±3%
⚠	C1528	QCY32HK-561AZ	CH C CAP.	560pF 500V K
⚠	C1529	QCY32HK-102AZ	CH C CAP.	1000pF 500V K
⚠	C1530	QCY32HK-102AZ	CH C CAP.	1000pF 500V K
⚠	C1532	QETC1EM-477ZJ5	E CAP.	470μF 25V M
⚠	C1533	QETB1VM-228J3	E CAP.	2200μF 35V M
⚠	C1534	QETB1EM-227J5	E CAP.	220μF 25V M
⚠	C1536	QET52ER-106	E CAP.	10μF 250V R
	C1542	QFN42DK-332J1	M CAP.	3300pF 200V K
⚠	C1544	QCY32HK-561AZ	CH C CAP.	560pF 500V K
	C1545	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
	C1603	QFLC1HK-473MZ	M CAP.	0.047μF 50V K
	C1605	QFLC1HK-103MZ	M CAP.	0.01μF 50V K
	C1606	QFN31HK-392ZJ1	M CAP.	3900pF 50V K
	C1622	QEN61HM-105ZJ3	BP E CAP.	1μF 50V M
	C1623	QFN31HK-472ZJ1	M CAP.	4700pF 50V K
	C1626	QEHB1HM-106M	E CAP.	10μF 50V M
	C1628	QFLC1HK-473MZ	M CAP.	0.047μF 50V K
	C1632	QFZ0083-823M	M CAP.	0.082μF 50V J
	C1700	QEB61HM-104MZ	E CAP.	0.1μF 50V M
	C1707	QFN31HK-222ZJ1	M CAP.	2200pF 50V K
	C1708	QFLC1HK-333MZ	M CAP.	0.033μF 50V K
	C1718	CECN003-101	NET CAP.	
⚠	C1791	QEH52EM-475M	E CAP.	4.7μF 250V M
⚠	C1792	QEH52CM-336M	E CAP.	33μF 160V M
	C1816	QFLC1HK-103MZ	M CAP.	0.01μF 50V K
⚠	C1901	QCZ9025-472A	C CAP.	4700pFAC125V P
⚠	C1902	QCZ9025-472A	C CAP.	4700pFAC125V P
⚠	C1903	QCZ9025-472A	C CAP.	4700pFAC125V P
⚠	C1904	QEZ0169-337M	E CAP.	330μF 200V M
⚠	C1905	QET52CR-106	E CAP.	10μF 160V R
⚠	C1906	QFZ9022-104M	M F CAP.	0.1μFAC250V M
⚠	C1907	QFZ9022-473M	M F CAP.	0.047μFAC250V M
⚠	C1908	QET52CR-107	E CAP.	100μF 160V R
	TRANSFORMER			
	T1103	A75588-B-T	AFC TRANSFORMER	
	T1104	CELT004-201J1	C. W. TRANSFORMER	
	T1301	CELT030-001J1	3.58 BP TRANS	
	T1521	CEX40133-001J1	H. DRIVE TRANSF.	
	T1601	CELT013-101J1	TAKE-OFF TRANSF	

	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	TRANSFORMER			
	T1602	CELT005-101J1	S. I. F. TRANSF.	
	COIL			
	L1101	CELP041-R47J5	PEAKING COIL	0.47μH
	L1102	CELP026-1R0ZJ3	PEAKING COIL	1.0μH
	L1103	CELP026-150ZJ3	PEAKING COIL	15μH
	L1201	CE40547-470J1	PEAKING COIL	47μH
	L1301	CELP026-2R2ZJ3	PEAKING COIL	2.2μH
⚠	L1351	CELP023-181J3	PEAKING COIL	180μH
⚠	L1352	CJ30030-046	HEATER CHOKE	
	L1521	CELP026-560ZJ3	PEAKING COIL	56μH
	L1524	CE41169-002	PEAKING COIL	
	L1525	CE41169-002	PEAKING COIL	
	L1702	CELP027-220ZJ3	PEAKING COIL	22μH
	L1703	CELP017-4R7YJ4	PEAKING COIL	4.7μH
	L1704	CELP017-4R7YJ4	PEAKING COIL	4.7μH
	L1705	CELP017-4R7YJ4	PEAKING COIL	4.7μH
	L1706	CELP017-4R7YJ4	PEAKING COIL	4.7μH
	L1707	CELP017-4R7YJ4	PEAKING COIL	4.7μH
	L1708	CELP026-2R2ZJ3	PEAKING COIL	2.2μH
	L1831	CELP026-1R0J3	PEAKING COIL	1.0μH
	DIODE			
	D1102	RD8.2ES(B1)-T2	ZENER DIODE	
	D1103	1SS133-T2	SI. DIODE	
	D1104	1SS133-T2	SI. DIODE	
	D1201	RD7.5E(B3)	ZENER DIODE	
	D1202	1SS133-T2	SI. DIODE	
	D1203	MA4150(L)-T2	ZENER DIODE	
	D1204	1SS133-T2	SI. DIODE	
	D1205	1SS133-T2	SI. DIODE	
	D1207	1SS133-T2	SI. DIODE	
	D1208	1SS133-T2	SI. DIODE	
	D1209	1SS133-T2	SI. DIODE	
	D1210	1SS133-T2	SI. DIODE	
	D1301	1SS133-T2	SI. DIODE	
	D1302	1SS133-T2	SI. DIODE	
	D1303	1SS133-T2	SI. DIODE	
	D1304	1SS133-T2	SI. DIODE	
	D1305	1SS133-T2	SI. DIODE	
	D1306	1SS133-T2	SI. DIODE	
	D1401	1SS133-T2	SI. DIODE	
⚠	D1421	1SR35-100-T3	SI. DIODE	
	D1501	MA4068(L)-T2	ZENER DIODE	
	D1502	MA4091(M)-T2	ZENER DIODE	
⚠	D1503	MA4068(N)C1-T2	ZENER DIODE	
⚠	D1504	1SS81-T2	SI. DIODE	
⚠	D1532	RGP10J-T3	SI. DIODE	
⚠	D1533	RGP10J-T3	SI. DIODE	
⚠	D1534	RGP10J-T3	SI. DIODE	
⚠	D1536	RH1S-T3	SI. DIODE	
	D1537	1SS81-T2	SI. DIODE	
	D1702	1SS133-T2	SI. DIODE	
	D1703	1SS133-T2	SI. DIODE	
	D1704	1SS133-T2	SI. DIODE	
	D1705	1SS133-T2	SI. DIODE	
	D1706	1SS133-T2	SI. DIODE	
	D1710	1SS133-T2	SI. DIODE	
	D1711	1SS133-T2	SI. DIODE	
	D1712	1SS133-T2	SI. DIODE	

	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	DIODE			
	D1713	1SS133-T2	SI. DIODE	
	D1714	SEL1210S	L. E. D. (RED)	Power Indicator
	D1716	MA4056 (M) -T2	ZENER DIODE	
	D1718	1SS133-T2	SI. DIODE	
	D1719	1SS133-T2	SI. DIODE	
	D1721	1SS133-T2	SI. DIODE	
	D1722	1SS133-T2	SI. DIODE	
	D1723	1SS133-T2	SI. DIODE	
	D1724	1SS133-T2	SI. DIODE	
	D1725	1SS133-T2	SI. DIODE	
	D1770	CE41009-00F	DIODE ARRAY	
	D1774	1SS244-T2	SI. DIODE	
	D1775	1SS244-T2	SI. DIODE	
⚠	D1791	1SS146-T2	SI. DIODE	
⚠	D1792	1SS146-T2	SI. DIODE	
⚠	D1793	1S1887A-T3	SI. DIODE	
	D1794	MA4062 (H) -T2	ZENER DIODE	
	D1795	1SS133-T2	SI. DIODE	
	D1796	1SS133-T2	SI. DIODE	
	D1797	1SS133-T2	SI. DIODE	
	D1798	MA4091 (M) -T2	ZENER DIODE	
	D1831	1SS133-T2	SI. DIODE	
	D1841	MA4330 (M) -T2	ZENER DIODE	
⚠	D1901	1S1887A-LC7	SI. DIODE	
⚠	D1902	1S1887A-LC7	SI. DIODE	
⚠	D1903	1S1887A-LC7	SI. DIODE	
⚠	D1904	1S1887A-LC7	SI. DIODE	
⚠	D1905	1S1887A-T3	SI. DIODE	
	TRANSISTOR			
	Q1101	2SC1906-T	SI. TRANSISTOR	
	Q1102	2SA933S (QR) -T	SI. TRANSISTOR	
	Q1103	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1201	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1202	2SA933S (QR) -T	SI. TRANSISTOR	
	Q1204	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1351	2SC3271 (NP)	SI. TRANSISTOR	B. Out
	Q1352	2SC3271 (NP)	SI. TRANSISTOR	G. Out
	Q1353	2SC3271 (NP)	SI. TRANSISTOR	R. Out
	Q1521	2SC2482 (C1) -T	SI. TRANSISTOR	
⚠	Q1522	2SD1554-C1	SI. TRANSISTOR	H. Out
	Q1701	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1702	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1704	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1705	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1706	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1707	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1708	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1709	2SC1740S (QR) -T	SI. TRANSISTOR	
	Q1710	2SC1740S (QR) -T	SI. TRANSISTOR	
⚠	Q1791	2SC2073	SI. TRANSISTOR	
	Q1792	2SC3271 (NP) -C1	SI. TRANSISTOR	
	IC			
	IC1101	M51496P	I. C. (M)	
	IC1201	TA8601BNV	I. C.	
	IC1301	AN5352N	I. C.	
⚠	IC1421	UPC1488H	I. C. (MONO-ANA)	
⚠	IC1621	AN5265	I. C.	
	IC1701	MN152121JGM2	I C	

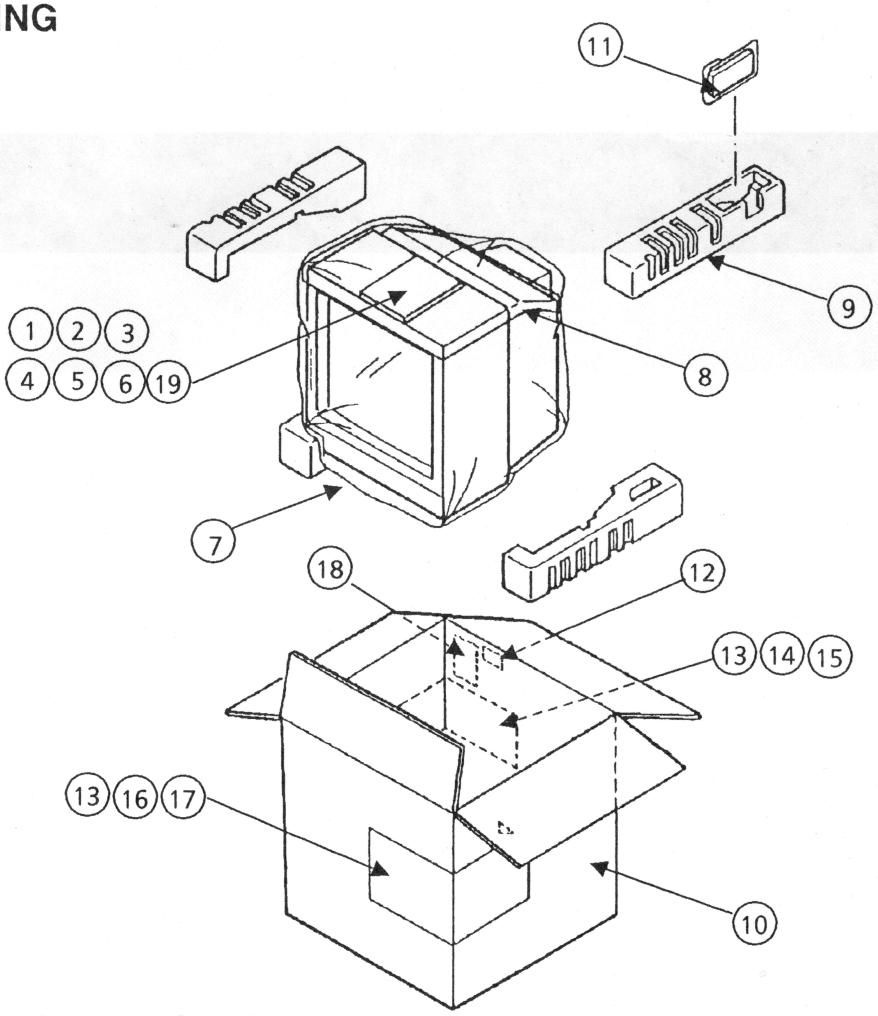
	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	IC			
	IC1702	MN1280-K	I. C (DIGI-MOS)	
	IC1801	TA78L005AP-Y	I. C. (H)	
	IC1831	MN12C201D	I. C. (M)	
	IC1841	GP1U721Q	IFR DETECT UNIT	
⚠	IC1901	STR30130	I. C. (H)	
	FUSE			
⚠	F1901	QMF66U1-5R0S	FUSE	5. 0A
⚠	F1902	QMF53U1-1R25S	FUSE	1. 25A
	OTHERS			
		CE41507-001P	LV CONNECTOR	
⚠		CE41748-001	CRT SOCKET	
		CM44462-002-H	LED SHADE	
	CF1101	CE41505-001	CERAMIC FILTER	
	CF1501	CSB503F17-T2	C RESONATOR	
	CF1601	A74603-C	CERAMIC FILTER	
	CF1701	CSA4. 00MS3	CERAMIC FILTER	
	DL1201	CE41108-001J1	DELAY LINE	
⚠	LF1901	CE41506-00BJ1	LINE FILTER	
⚠	RY1901	CESK019-002	RELAY	
	SF1101	CE41706-201	SAW FILTER	
	S1201	QSL6A13-C01J2	LEVER SWITCH	Service
	S1701	QSP1A11-C12	PUSH SWITCH	Function
	S1702	QSP1A11-C12	PUSH SWITCH	Down
	S1703	QSP1A11-C12	PUSH SWITCH	Up
	S1704	QSP1A11-C12	PUSH SWITCH	Power
	S1705	QSP1A11-C12	PUSH SWITCH	Vol△
	S1706	QSP1A11-C12	PUSH SWITCH	Vol▽
⚠	TH1901	CEKP001-001J1	P. THERMISTOR	
⚠	TU1701	CEEK253-A02-M	TUNER	(US)
	X1301	CE40668-001J1	CRYSTAL	
	X1701	CE41490-001	CRYSTAL	

MAIN PW BOARD ASS'Y (SX-1252A(H2)) [CA]

Regarding the parts list for the main PW board ass'y [SX-1252A(H2)] of the model for canada, only the different parts from those of the model [SX-1251A(H2)] are described. For further details regarding the other parts, refer to the parts list of the model [SX-1251A(H2)] described on page30 through page 34.

⚠	SYMBOL No.	PARTS No.		PARTS NAME	REMARKS
		America Model(US) SX-1251A(H2)	Canada Model(CA) SX-1252A(H2)		
⚠	TU1701	CEEK253-A02-M	CEEK254-A02-M	TUNER	

PACKING



PACKING PARTS LIST

SYMBOL NO.	PART NO.	PART NAME	REMARKS
1	CM34994-00A-T2	ROD ANTENNA	
2	C13, 20L3UIBA-H	INST BOOK	(US)
2	C13, 20L3CIBA-H	INST BOOK	(CA)
3	CE42024-00AJ1	MATCHING BOX	
4	CM21229-004-H	SAFETY TIPS	US ONLY
5	BT-20108A-H	SERVICE INF CARD	(US)
5	BT-20071A-H	SERVICE INF CARD	(CA)
6	BT-20113B-H	WARRANTY CARD	(US)
6	BT-20025K-H	WARRANTY CARD	(CA)
7	CP30697-003-H	POLY BAG	
8	CP30698-001-H	TOP COVER	
9	CP11053-00A-H	CUSHION ASS'Y	4pcs in 1set
10	CP10974-016-H	PACKING CASE	
11	RM-C423-KD2-T	RC HAND PIECE	C-13CL3
11	RM-C423WH-KD1H	RC HAND PIECE	C-13WL3
12	CP30664-033 (R)	POS LABEL	C-13CL3
12	CP30664-034 (R)	POS LABEL	C-13WL3
13	CP20584-009-H	13CL3 E LABEL	×2 C-13CL3 (US)
13	CP20584-010-H	13WL3 E LABEL	×2 C-13WL3 (US)
14	CP20586-012-H	13CL3 F LABEL	C-13CL3 (CA)
15	CP20586-013-H	13WL3 F LABEL	C-13WL3 (CA)
16	CP20585-012-H	13CL3 E LABEL	C-13CL3 (CA)
17	CP20585-013-H	13WL3 E LABEL	C-13WL3 (CA)
18	CM22029-00A	REC KEEPING CARD	US ONLY
19	QPGA025-04005H	POLY BAG	

C-13CL3/C-13WL3(US&CA)
STANDARD CIRCUIT DIAGRAM

■NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the ⚠symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal :Color bar signal
(2)Setting positions of each knob/button and variable resistor :Original setting position when shipped
(3)Internal resistance of tester :DC 20kΩ/V
(4)Oscilloscope sweeping time :H ⇒20μS/div
:V ⇒5mS/div
:Others ⇒ Sweeping time is specified
(5)Voltage values :All DC voltage values

* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL[EXAMPLE]

●In the PW board :R1209→R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

●Resistance value
No unit :[Ω]
K :[KΩ]
M :[MΩ]

●Rated allowable power
No indication :1/6[W]
Others :As specified

●Type
No indication :Carbon resistor
OMR :Oxide metal film resistor
MFR :Metal film resistor
MPR :Metal plate resistor
UNFR :Uninflammable resistor
FR :Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

●Capacitance value
1or higher :[pF]
less than 1 :[μF]

●Withstand voltage
No indication :DC50[V]
Others :DC withstand voltage[V]
AC indicated :AC withstand voltage[V]

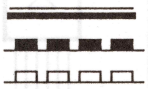
* Electrolytic Capacitors
47/50[Example]:Capacitance value[μF]/withstand voltage[V]

●Type
No indication :Ceramic capacitor
MY :Mylar capacitor
MM :Metalized mylar capacitor
PP :Polypropylene capacitor
MPP :Metalized polypropylene capacitor
MF :Metalized film capacitor
TF :Thin film capacitor
BP :Bipolar electrolytic capacitor
TAN :Tantalum capacitor

(3)Coils

No unit :[μH]
Others :As specified

(4)Power Supply

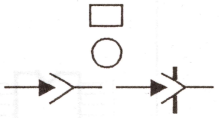

:B1(129.3V)
:B2(12V)
:5V

* Respective voltage values are indicated.

(5)Test Point

: Test point
: Only test point display

(6)Connecting method


: Connector
: Wrapping or soldering
: Receptacle

(7)Ground symbol

: LIVE side ground
: NEUTRAL side ground
: EARTH ground
: DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

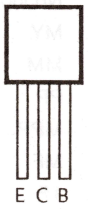
USE ISOLATION TRANSFORMER BECAUSE THIS PRODUCT IS A HOT CHASSIS !

Whenever any service on this product is performed, AC power of the product should be supplied through an adequate capacity isolation transformer whose power supply cord is connected to the wall outlet.
If the above precaution is not respected, an electric shock may be caused when you touched the chassis with the hand.

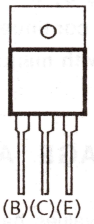
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

SEMICONDUCTOR SHAPES (* = Bottom view)

2SC1906
2SC2482(C1)



2SA933S(QR)
2SC1740S(QR)



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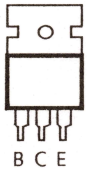

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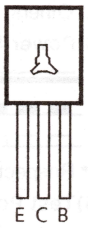

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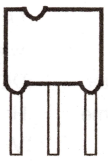

MN1280-K

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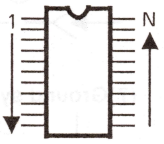

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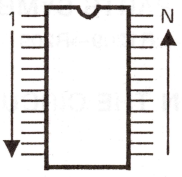
MN12C201D



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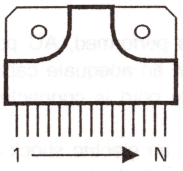
MN152121JMT5



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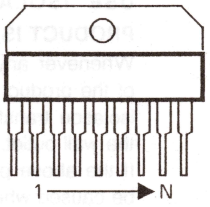

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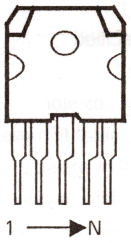

IC
STR30130

CHANNEL CHART

[US]

■ CHANNEL CHART

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISPLAY	TUNER BAND
○	○	VL	02	02	I
			03	03	
			04	04	
			05	05	
			06	06	
		VH	07	07	II
			08	08	
			09	09	
			10	10	
			11	11	
			12	12	
			13	13	
×	○	MID	A	14	I
			B	15	
			C	16	II
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
			V	35	
			W	36	
		HYPER	W+1	37	III
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	IV
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		ULTRA	W+29	65	
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISPLAY	TUNER BAND
×	○	ULTRA	W+35	71	IV
			W+36	72	
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
			W+52	88	
			W+53	89	
			W+54	90	
			W+55	91	
			W+56	92	
			W+57	93	
			W+58	94	
			W+59	100	
			W+60	101	
			W+61	102	
			W+62	103	
			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	I
			A-4	96	
			A-3	97	II
			A-2	98	
			A-1	99	
○	×	UHF	14 ~ 69		IV

TOTAL 180 ch { VHF 124 ch / UHF 56 ch

NOTE: TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES.
SPECIAL ADAPTERS MAY BE REQUIED.

[CA]

■ CHANNEL CHART

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISPLAY	TUNER BAND
○	○	VL	02	02	I
			03	03	
			04	04	
			05	05	
			06	06	
		VH	07	07	II
			08	08	
			09	09	
			10	10	
			11	11	
			12	12	
			13	13	
×	○	MID	A	14	II
			B	15	
			C	16	
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	III
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
			V	35	
			W	36	
		HYPER	W+1	37	
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		ULTRA	W+29	65	IV
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	
			W+35	71	

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISPLAY	TUNER BAND
×	○	ULTRA	W+36	72	IV
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
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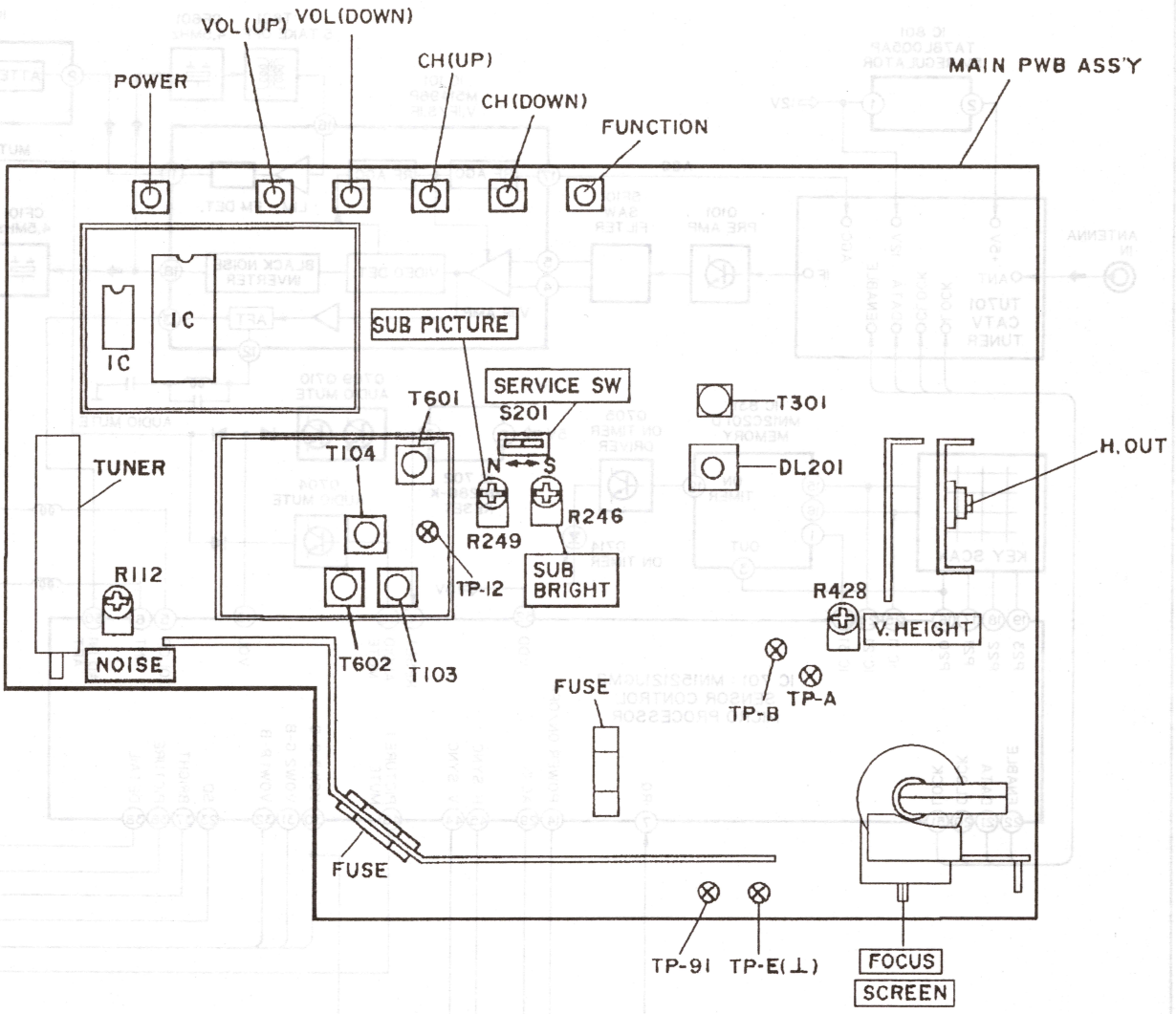
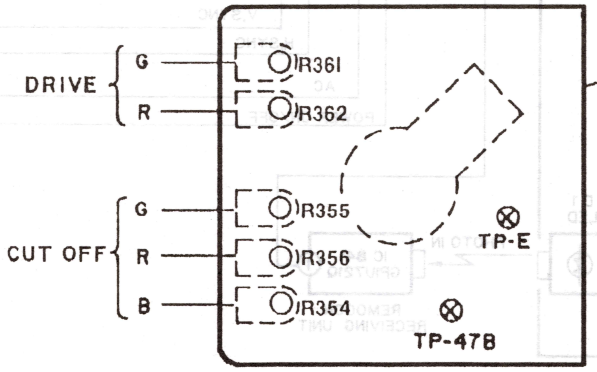
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	I
			A-4	96	
			A-3	97	II
			A-2	98	
			A-1	99	
○	×	UHF	14 ~ 69		IV

TOTAL 180 ch { VHF 124 ch / UHF 56 ch

NOTE: TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES.
SPECIAL ADAPTERS MAY BE REQUIRED.

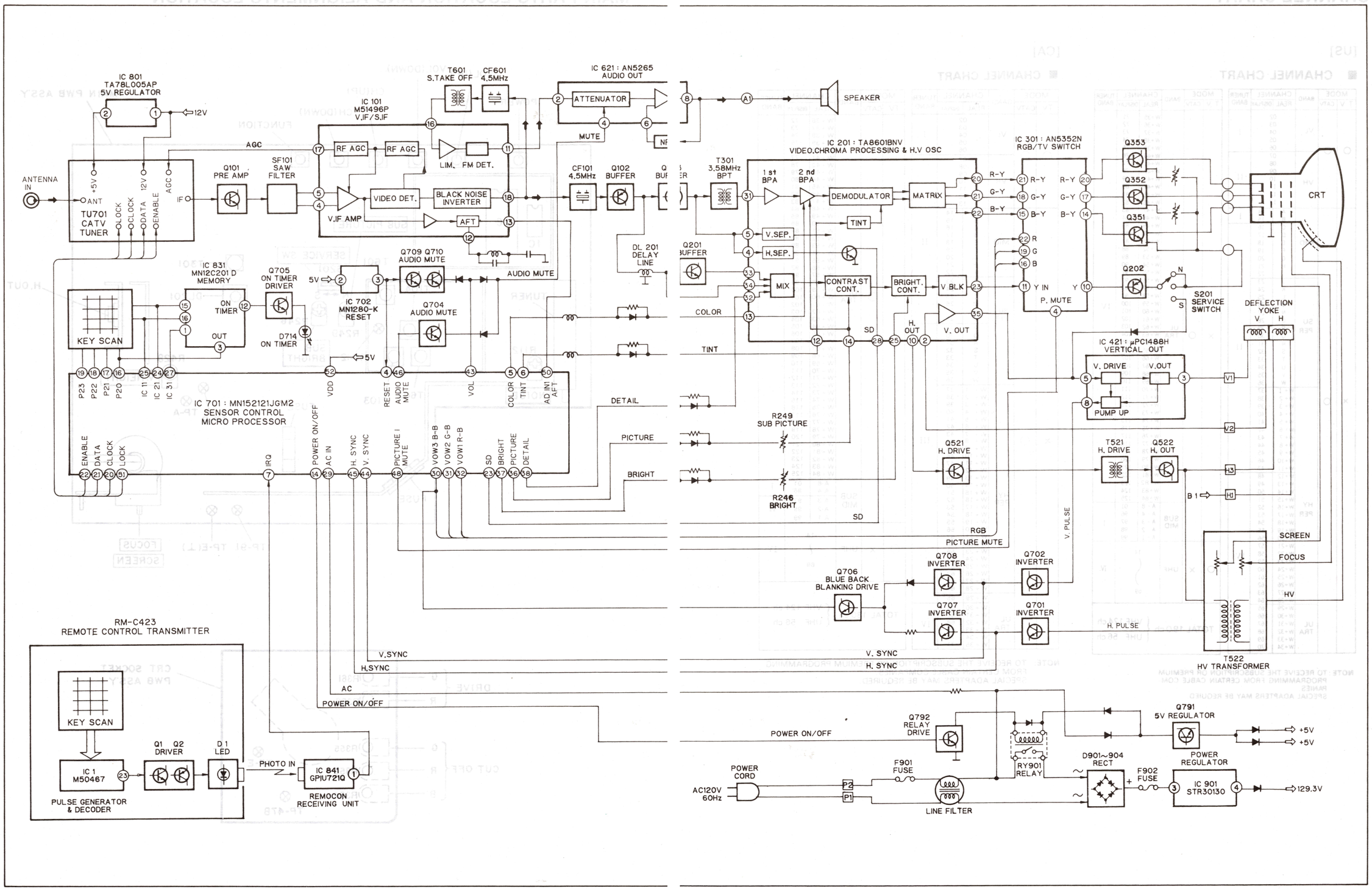
MAIN PARTS LOCATION AND ALIGNMENTS LOCATION





C-13CL3
C-13WL3

BLOCK DIAGRAM



C-13CL3
C-13WL3

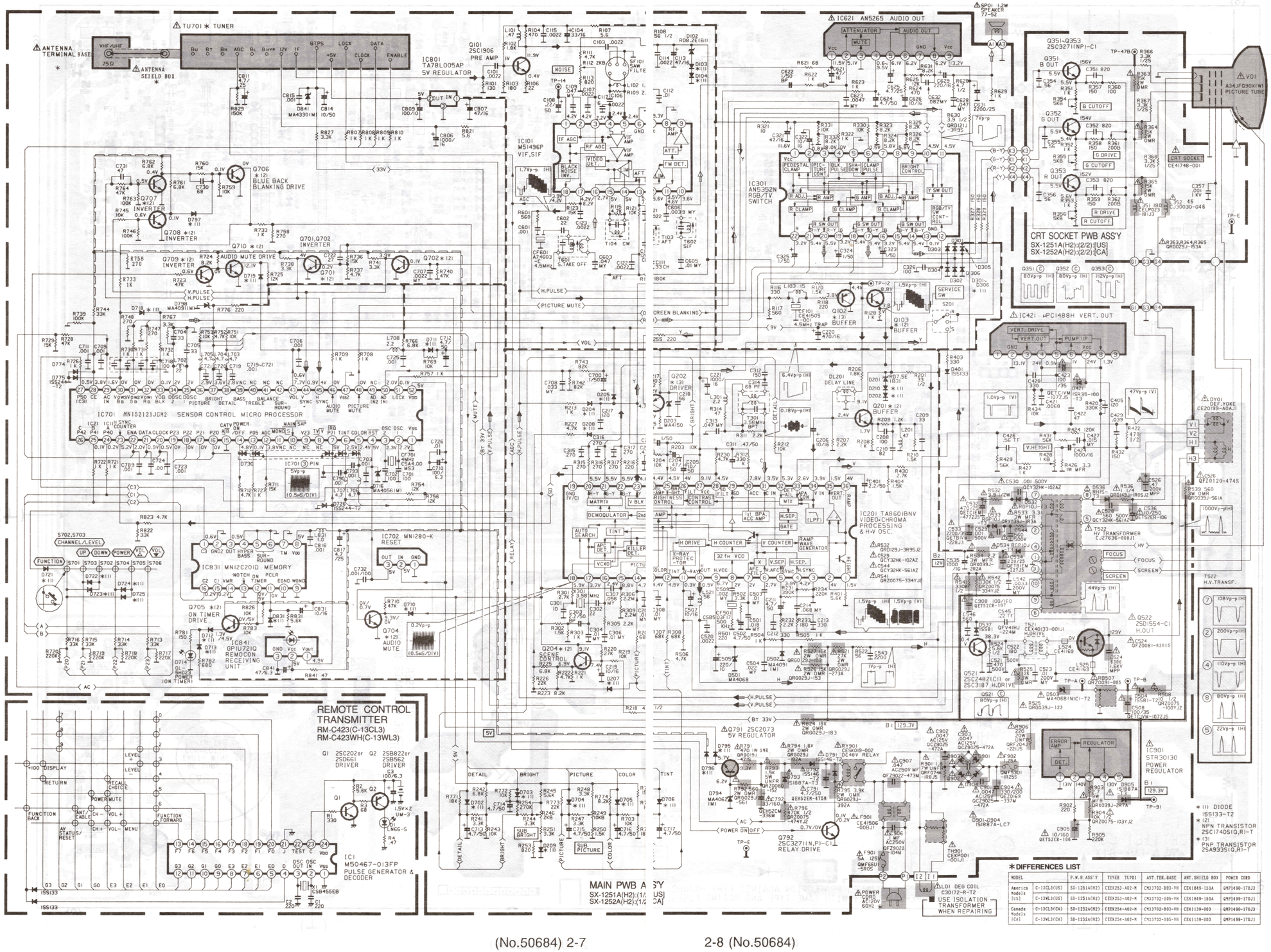
C-13CL3
C-13WL3

CIRCUIT DIAGRAMS AND PWB PATTERNS

MAIN PWB, CRT SOCKET PWB CIRCUIT DIAGRAMS

* This schematic diagram applies to both (US) and (CA) models. Refer to the Difference List in the diagram regarding the differing points between the models.

Refer to the following PWB patterns : MAIN PWB 2-9page, CRT SOCKET PWB 2-10page.



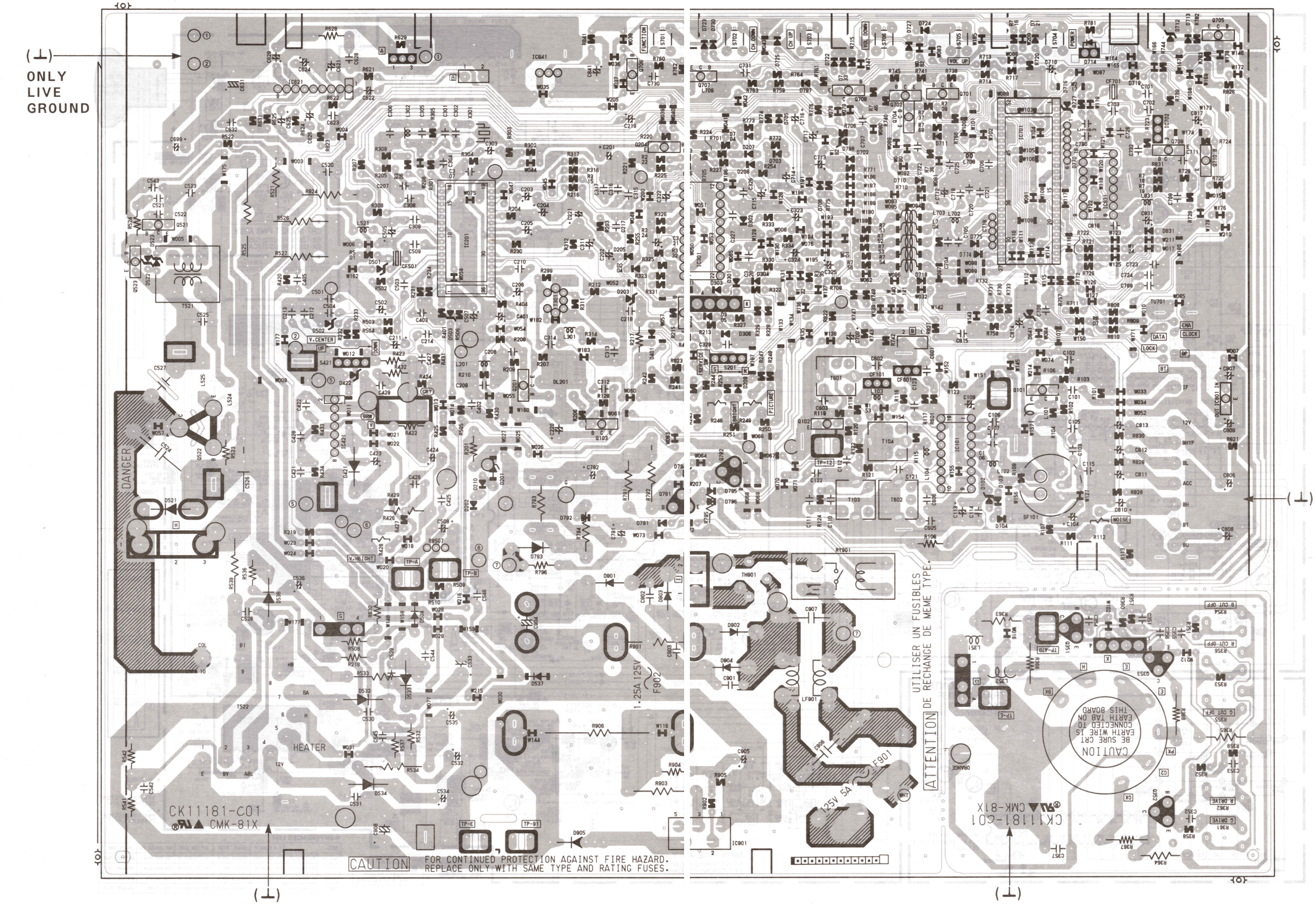
*DIFFERENCES LIST

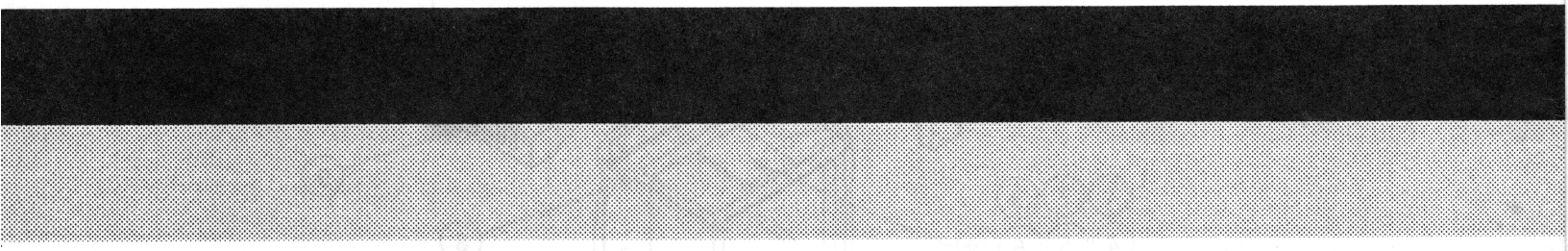
MODEL	P.W.B ASS'Y	TUNER TU701	ANT.TER.BASE	ANT.SHIELD BOX	POWER CORD
America Models (US)	C-13CL3(US)	SX-1251A(H2)	CEEX253-A02-K	CW33702-B03-VH	CE41849-150A	QMP1490-170J3
	C-13WL3(US)	SX-1251A(H2)	CEEX253-A02-K	CW33702-005-VH	CE41849-150A	QMP1499-170J3
Canada Models (CA)	C-13CL3(CA)	SX-1252A(H2)	CEEK254-A02-K	CW33702-B03-VH	CE41139-003	QMP1490-170J3
	C-13WL3(CA)	SX-1252A(H2)	CEEX254-A02-K	CW33702-005-VH	CE41139-003	QMP1499-170J3

C-13CL3
C-13WL3

MAIN PWB, CRT SOCKET PWB PATTERN (SX-1251A(H2)) [US] / (SX-1252A(H2)) [CA]

(Magnification Rate 96%)





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JVC

C-13CL3(USH)
C-13WL3(USH)
C-13CL3(CAH)
C-13WL3(CAH)

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